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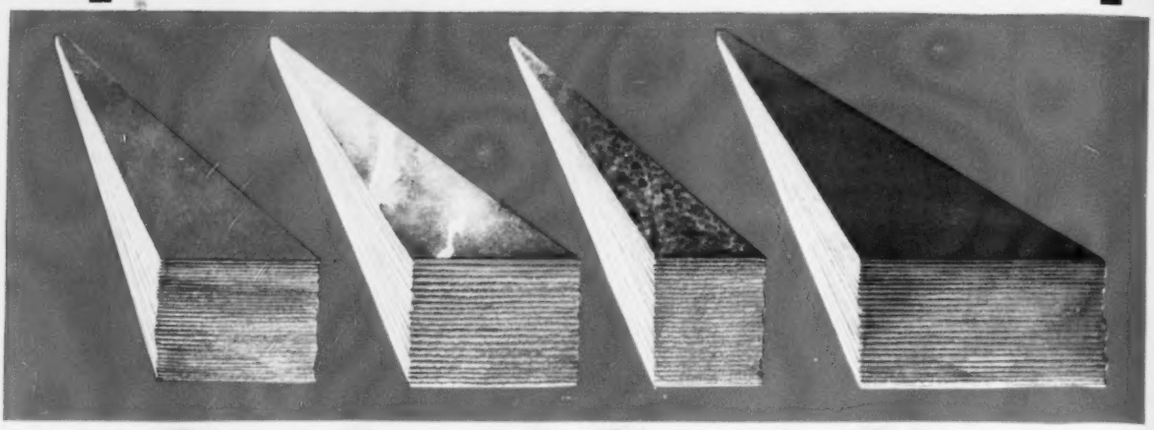

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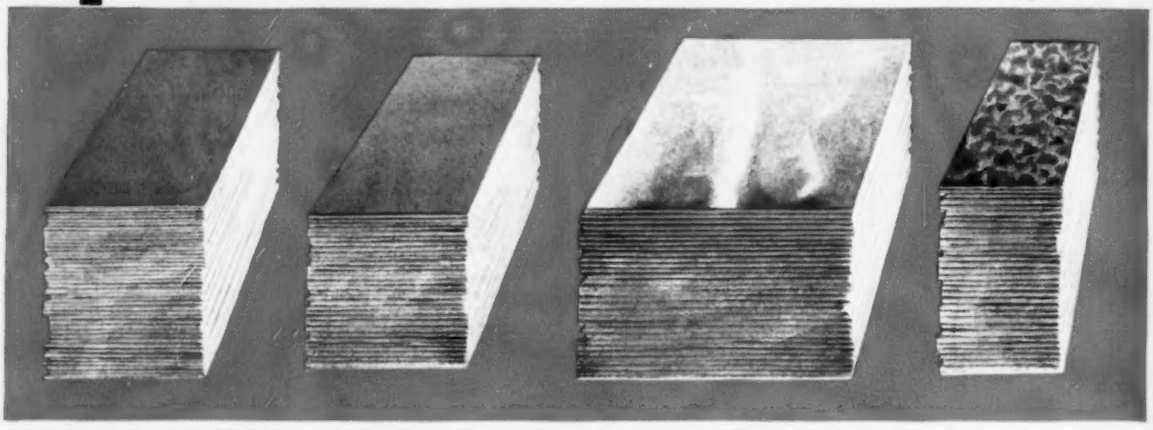

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Volume 91 Number 21

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

OBSOLESCENCE is a power which is ruthless if not appeased. At the Nov. 8 election it took toll of countless officeholders who ignored it. Steel, more forehanded, always has paid handsome tribute, but since the war has done increasing obeisance. An analysis of the financial history of the United States Steel Corp., first of a series on the entire industry, discloses (p. 11) that its charges for depreciation and depletion from 1919 to 1931 averaged 33 per cent of earnings, contrasted with 21 per cent in the pre-war period 1902-15. No greater physical strain upon equipment is indicated; but rather, recognition of an oncoming, changed competitive situation, still indistinct but certain to entail premature replacement of much plant.

Says Capitalism Is "Freedom of Enterprise"

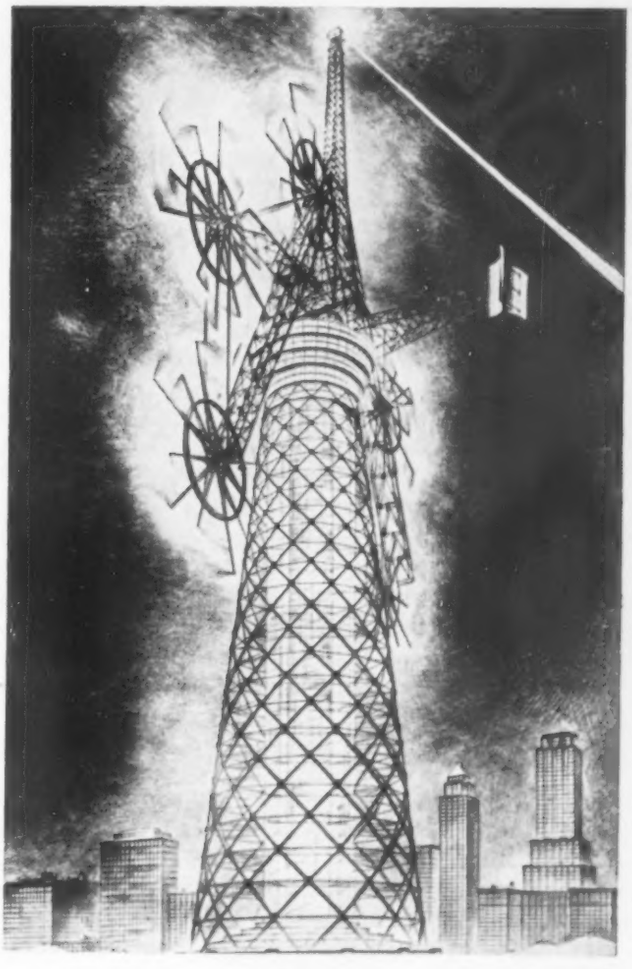
This spirit of maintaining chargeoffs regardless of the times is illustrative of the "American system of freedom of enterprise," by which the president of the National Founders association rechristens capitalism. But, it was asserted vigorously at the association's recent convention (p. 13), taxation must be curbed if industry is to retain the strength and courage to survive for the new day. Speakers also urged founders to persist in educational and personnel work, reporting a slow but basic improvement in industry. . . . For rehabilitation, which involves forced obsolescence of much equipment, the comparatively few industrial establishments canvassed have pledged $70,875,000, the Robertson committee says (p. 12).

Obsolescence Is Now in the Drama

Obsolescence was cast as the villain and the oxyacetylene welding and cutting process as the hero, rescuing a languishing business, in a three-act drama used effectively at the International Acetylene association convention (p. 15). A capacity house of 2500 was impressed with the moral—keep equipment ready. . . . When the American Society of Mechanical Engineers convenes in New York next month it will capitalize (p. 34) on a program devoted to rolling of metals, soaking pits and radiant heat, cutting alloys and cutting of metals, bearings, lubrication and uses for castings.

Steel Output Passes Crest of Fall Rise

Steel production, on an upward trend since the first week of September, has reversed itself



Wide World Photo

Artist's conception of 2000-foot wind-power tower to be erected by Germany at the 1933 Chicago fair. The five wheels, 360 feet in diameter, will generate 80,000 horsepower. The tower will accommodate 15,000 persons

with a decline to 19 per cent (p. 45), but whether more than the seasonal easiness is in store is undetermined. . . . Swinging into new models, automotive manufacturers continue the industry's best customer. Detroit is again interested in the report (p. 19) that a low-price eight is Ford's prospective weapon for reclaiming his market. . . . A heartening development is a manufacturers' survey indicating (p. 16) a larger percentage is convinced of better prospects for the winter. . . . European market reports are more optimistic this week than American ones (p. 60). British production increased in October.

Averaging Down Electric Furnace Costs

Power demand charges for large electric melting furnaces becoming excessive at reduced outputs, a unit has been designed to act as a bleeder (p. 32). Of the three-phase type, this unit can be utilized for making special alloy heats, superheating and refining hot metal, as well as general utility or experimental purposes. Equipped with its own transformer and controls, it becomes an individual unit. . . . In the open-hearth furnace the heat flow through back walls averages nearly four times that through the minimum furnace bottom, emphasizing (p. 26) the importance of improved back wall design. Many engineers are coming to favor silica brick for back walls.

Stainless Steel Broadening Its Appeal

Nickel-clad corrosion-resisting steel is now being supplied in a new type of finish, called "hot rolled and cleaned," which has a matte-like appearance resembling pure nickel, although lacking the luster of cold-rolled full-finished nickel sheets (p. 32). A more complete range of nickel-clad plate and circle sizes is available. . . . After some 6000 tests, 18-8 austenitic stainless steel is accorded (p. 34) a high rating for use in dyeing equipment, the ease of cleaning enabling one steel vat to supplant ten or more wooden ones. . . . Even the Soviet government lends its recognition, starting construction of a stainless steel plant (p. 12) with an annual capacity of 25,000 tons.

Up to the Minute in Engineering:

A motor claimed to draw its power from the atmosphere and to approach perpetual motion will be demonstrated (p. 25) at the exposition of power and mechanical engineering in New York next month. . . . A 6-room house designed to be erected for $3000 uses enameled steel sheets (p. 23) which are being pushed for walls and partitions for small houses, filling stations and stores. . . . Lubricating oils are subject to the new federal 4-cent a gallon tax, but most greases are exempt.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

The Menace of Rising Pig Iron Imports

To the Editor:

In New York, Pennsylvania and Massachusetts are located 13 corporations, each owning one or more blast furnaces. All of these corporations produce "merchant" pig iron to some extent. The logical market for these furnaces comprises 11 states—the so-called eastern division.

Into this natural market foreign pig iron is being dumped in increasing quantities. The first six months of this year witnessed the entry of 68,814 long tons of foreign iron on the eastern seaboard alone, an increase of shipments into this area of 56 per cent over the corresponding period of 1931. Into this same area and during the same periods, shipments from furnaces mentioned in the preceding paragraph declined a similar percentage. Recent offerings of foreign iron have been made as far west as Ohio and the effects of such offerings are being felt in Chicago.

A recent sale by a foreign producer was closed at a price at port of origin, assuming a nominal ocean freight, only slightly in excess of the cost of merely assembling at a domestic furnace the raw materials necessary to pig iron production. Yet the offending country's currency has depreciated 50 per cent (no gold standard there), and $10 in our money can be converted into what in theirs is equivalent to $20. In other words, they can undersell us by $5 per ton and the conversion of the resultant funds produces for them the equivalent of $5 per ton premium. In varying degrees the same is true of every country whose currency is home-made.

Must we sit still and watch complacently the distintegration of our business?

Take a sale of 10,000 tons for example. This deprives 125 American workmen (and this means some 500 people) of 20 days' labor at the blast furnace alone, to say nothing of the 12,600 tons of coal required, or the labor necessary to convert these 12,600 tons of coal into coke, or the 20,000 tons of ore required to be mined, or the 4500 tons of limestone required to be quarried, or the 35,600 tons of freight revenue lost to the transportation companies.

Can we liquidate labor to the standards of France, England, Germany, Belgium, Japan, etc. as low as 7 cents per hour? Can we reduce taxes and transportation charges in like ratio? For hauling pig iron 12 miles our railroads collect $1.50 per ton as against the $1 per ton for 3000 miles across the Atlantic ocean.

Based on iron imports for the first six months of this year, assuming the rate will continue until Jan. 1, 1933, the transportation companies will have lost, as a result, a half million tons of freight revenue and American workmen will have lost forever the opportunity of mining, quarrying or otherwise producing 500,000 tons of raw materials.

Assuming the average freight rate paid on blast furnace raw materials (coke, ore, limestone, etc) were only $1 per ton then there will have been lost to transportation over $500,000 in revenue, which is small indeed compared to the loss through idle property and unemployed labor.

There is only one recourse and that is an appeal to our representatives at Washington to carefully weigh the facts and then to assess a duty that will actually and adequately protect the industry and at the same time give employment to thousands who are now unwilling objects of charity.

EASTERN MERCHANT IRON PRODUCER

Profits in the Steel Industry—I—Before and After the War

BY EDMUND NEWTON

FROM antiquity the primary object of any private industrial enterprise has been to make a reasonable profit by performing some purpose useful to society. Regardless of how essential the service may be, no subdivision of industry can long endure unless, over a period of time, the average concern in it can make a reasonable profit. This "law of profits" has been admirably stated by Hayes* as follows:

"The rendering of services to a community entitles the renderer of those services to a primary claim upon the community for a fair average return upon the assets required to render those services in a reasonably economical manner."

The primary object of the steel industry is to make a reasonable profit. There can be no question of the usefulness, and the vital necessity of the service which the steel industry renders the nation, in times of war or in peace. There is a question however, as to whether or not, in the past, the steel industry has obtained a fair average return upon the assets required to render that service.

The purpose of this discussion is to bring together certain data from published reports of steel companies, over a period of years, to analyze these data and to attempt to interpret them in the light of the "law of profits," as stated above.

Scope of Term "Steel Industry"

The 1929 census of manufactures listed 486 establishments under "steel works and rolling mills," with a total value of product amounting to $3,365,789,000. In the same year, the published sales of 14 steel companies amounted to 71.5 per cent of this figure. In addition, six companies had probable sales, estimated from their published manufacturing profit, amounting to an additional 18.7 per cent. Therefore, the probable aggregate sales of these 20 of the largest steel companies accounted 90.3 per cent of the figure given by the census for value of product. The average amount of sales for these 20 companies therefore, was 216 times that of each of the remaining 466 establishments.

These 20 steel companies are more or less completely integrated units, producing a diversified line of steel products, and they may be taken as closely representing the primary steel industry. The larger group of 466 establishments, though they make steel, do so largely as an initial step in manufacturing operations which aim toward the production of more highly specialized articles. No attempt will be made to include this latter group in this study.

It would appear, from the small number of primary steel companies in 1929, that it would be relatively easy to obtain a comprehensive view of profits in the steel industry over a period of time. However, in 1929, only 14 of the 20 companies published fairly complete operating statements, including the amount of their sales. Only eight of the 20 have published sales continuously from 1920 to 1931 inclusive, and only few did so before the war.

Three Distinct Periods Since 1900

Since the turn of the century, the steel industry has experienced three distinct periods—before, during and since the war. The characteristics of each of these periods have differed and have been reflected by changed relationships between production and productive capacity, uses to which steel products have been put and finally prices, cost and profits. We may properly assume that the present depression marks a transition into another distinct period, which will no doubt differ materially from the three preceding. Just what the characteristics of the coming period of renewed activity may be, it is impossible to predict. Some of them will be imposed by conditions outside of the

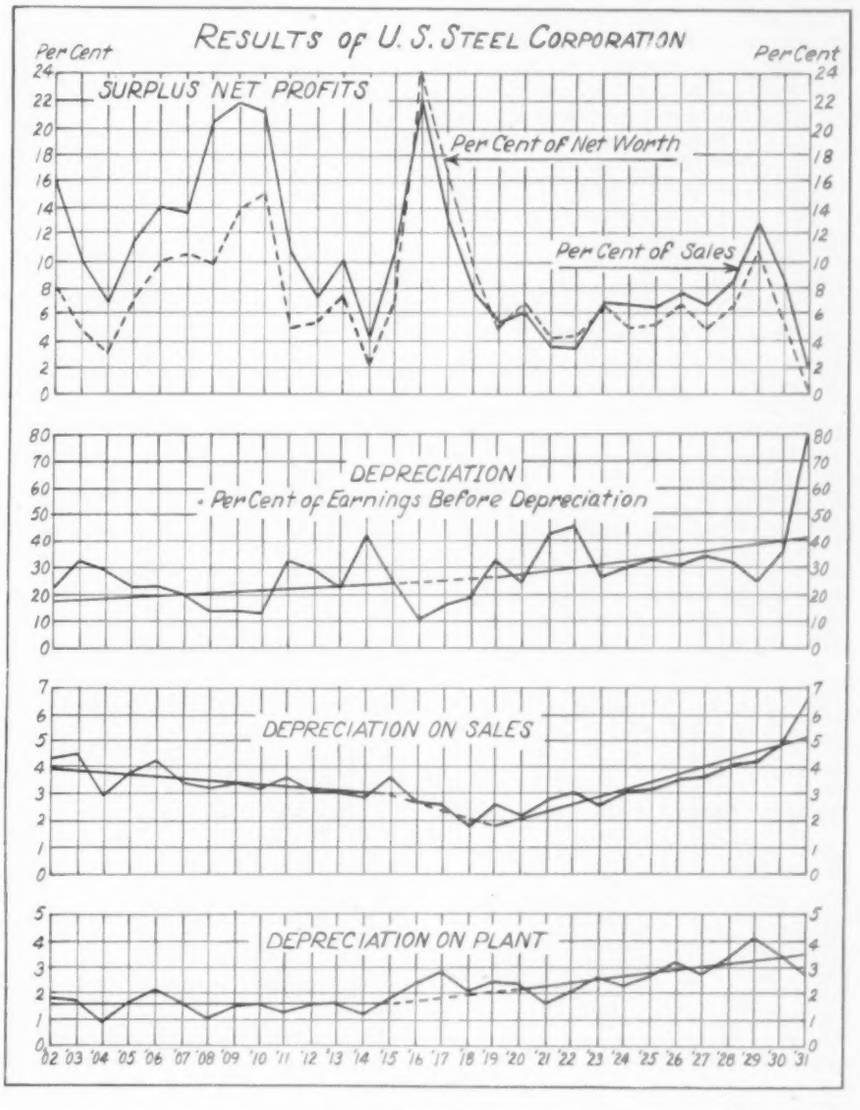

RESULTS of U. S. STEEL CORPORATION
Per Cent
Per Cent
SURPLUS NET PROFITS
Per Cent of Net Worth
Per Cent of Sales
DEPRECIATION
Per Cent of Earnings Before Depreciation
DEPRECIATION ON SALES
DEPRECIATION ON PLANT
'02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25 '26 '27 '28 '29 '30 '31

Fig. 1—Results of U. S. Steel Corp. from first annual report in 1902 to and including 1931

*Monard V. Hayes, "Accounting for Executive Control"; Harper & Bros., 1929, page 172.

industry, but others will arise entirely within the industry itself, and will therefore be subject to control, to the extent that they may be recognized and effort is put forth to modify those that are unfavorable.

The period since the war is the most important of the three periods in denoting recent trends and indicating the most likely directions in which favorable changes may be effected in the coming years. This period also affords the greatest amount of published data and will, therefore, be analyzed in greater detail. It will, however, be of interest to attempt to form an idea of comparative profits in all three periods, from such data as are available.

Profits in the Three Periods

Before the war, the published data of the "independent" steel companies are meager. However, the annual reports of the U. S. Steel Corp., from the first year of its operation in 1901, have been models of completeness and detail. From 1902 to 1915, the corporation produced 55.5 per cent of the total ingot production of the country, while since the war this percentage has decreased to 44.1. Therefore, in the period before the war, the financial results of the corporation would have had greater weight in affecting the average of the industry, than since the war. Whether the results of other companies differed materially from those of the Corporation in this earlier period, it is difficult to say. Since the war, however, the percentage of surplus net profits to net worth, for the corporation has been almost identical with that of the average of 11 companies, which represented nearly 75 per cent of the total ingot capacity of the country. The results of the corporation will give a fairly representative idea of the results of the industry in the three periods. Table I has been compiled for this purpose and the results are shown graphically in Fig. 1.

The most striking fact that this table brings out is that, before the war, when prices of steel products were lower, the rate of profit on ownership invested capital was nearly one and a half times as large as it has been since the war. Surplus net profit represented 7.81 per cent of net worth in the earlier period, while since the war, it has been only 5.25 per cent.

More Regard for Obsolescence

The variations in gross and net margin and both physical and dollar turnover, which have brought about these changes, are clearly evident.

In order to properly interpret profits, in the several periods, it is essential to consider the variation in the amount set aside for composite depreciation and depletion. These are indicated both in relation to the amount of sales and to plant and their trends are also shown. The most significant relationship is that of depreciation and depletion to earnings, before deducting these amounts. Before the war, this amounted to a weighted average of 21.25 per cent, with an increasing trend of 0.48 per cent per year. Since the war, this has increased to 33.25 per cent, with an indicated annual increase of 1.22 per cent.

These figures are significant. It cannot be that the rate of depreciation has become greater, or that the physical factor of wear and tear has increased, but rather that there has been a growing recognition of, and provision for, the economic factor of obsolescence.

This is the first of three articles by Mr. Newton. The next will appear in the issue of Nov. 28.—The Editors.

Table I

Results of U. S. Steel Corp. in Three Periods

Weighted Averages	1902 to 1915	1916 to 1918	1919 to 1931	Total and Average
Production				
Total ingot production—million tons	316.091	132.297	513.931	962.319
Tot. ingot prod. by Corp., million tons	175.810	60.779	226.809	463.398
% of total ingot production by Corp.	55.52	45.95	44.10	48.15
Per Cent of Sales				
Gross profit	21.81	34.87	15.27	20.14
Surplus net profit	12.87	13.59	6.89	9.64
Turnover				
$ sales per $ plant and equip.	$ 0.440	$ 1.020	$ 0.803	$ 0.665
Pounds ingot per $ plant and equip.	19.75	29.80	23.75	22.61
$ sales per $ total assets	$ 0.365	$ 0.656	$ 0.551	$ 0.492
Return on Investment				
Surplus net profit—per cent of net worth	7.81	16.10	5.25	7.19
Per Cent of Total Assets				
Plant and equipment	82.95	64.30	68.70	73.60
Per Cent of Total Liabilities				
Funded debt	32.85	25.40	19.25	25.20
Surplus—appropriated and unappr.	8.20	21.85	28.60	20.00
Depreciation and Depletion				
Per cent of plant and equipment—aver.	1.53	2.40	2.75	2.19
Trend per year	—0.01	.....	+0.13	.....
Per cent of net worth—aver.	2.12	2.78	2.61	2.46
Per cent of sales—aver.	3.47	2.35	3.43	3.29
Trend per year	—0.08	.....	+0.28	.....
Per cent of net earnings before deprec.	21.25	14.75	33.25	25.40

Over $70,000,000 Pledged For Rehabilitation Work

For new machinery and equipment plant facilities and general remodeling, $70,875,000 will be expended by companies reporting to A. W. Robertson, Pittsburgh, chairman of the President's committee on industrial rehabilitation.

Among these expenditures are National Steel Corp., $900,000; Allis-Chalmers Mfg. Co., $200,000; Newport Rolling Mill Co., $200,000; Continental Can Co., $150,000; Columbia Steel Co., $150,000; American Brake Shoe & Foundry Co. at South San Francisco, $50,000 to $75,000.

Large general expenditures include $35,000,000 by the American Telephone & Telegraph Co., $20,000,000 by the Standard Oil Co. of New Jersey and $5,000,000 by the Pacific Gas & Electric Co.

Sheet Production and Sales Up in October

Daily average sheet sales reported by the National Association of Flat Rolled Steel Manufacturers, Cleveland, increased to 3053 net tons in October, from 2631 tons in September. Production stepped up to 3484 tons from 2994 tons; and shipments to 2981 tons from 2516 tons. The total of October sales was 94,656 tons; production, 108,111 tons; and shipments, 92,424 tons. Unfilled tonnage as of Nov. 1 was 90,707 tons, compared with 86,570 tons Oct. 1.

Total sheet capacity in the United States for October was approximately 550,000 tons, and the capacity on which the association's figures are based was 376,500 tons.

Rustless Plant for Soviet

The Soviet government has begun construction of a plant for producing rustless steel, with an annual capacity of 25,000 tons, on the site of the Cheliabinsk Electro-Metallurgical Combine. The plant is to be ready by October, 1933, according to the USSR chamber of commerce.

Founders Consider Taxation And Federal Legislation

WITH a courageous but somewhat apprehensive eye on the business weather vane, foundrymen vigorously attacked their economic problems at the thirty-sixth annual convention of the National Founders association in New York, Nov. 16-17.

Special attention was directed to taxation and federal legislation and to measures designed to further the slight improvement in business this fall.

Personnel questions engaged considerable discussion, and the greater portion of one session was given over to the subject of "Silicosis in the Foundry." Attendance of approximately 110 was comparable with that of a year ago.

S. Wells Utley, Detroit Steel Castings Co., Detroit, was re-elected president, and Thomas W. Pangborn, Pangborn Corp., Hagerstown, Md., was elected vice president.

Sound Call for Lower Taxes

The association passed a resolution calling for reorganization and economy in federal, state and local government as a fundamental need to the reduction in taxation and return of prosperity.

Labor trouble at three member plants was encountered during the past year, reported A. E. McClintock, commissioner. Opinion prevailed that no extensive labor agitation likely would be witnessed until business begins picking up.

An eloquent defense of the American system of freedom of enterprise, was made by Mr. Utley in his presidential address. By virtue of this system, whereby the individual is spurred to achievement by prospects of adequate reward, this country in 147 years has become the strongest and the wealthiest in the world, he maintained.

Initiative Is Rewarded

Under this system, the speaker asserted, society has so organized itself that when any man, be he laborer or capitalist, strives in a legitimate manner to advance his own interests by the production of more than he consumes, the major part of the benefit comes not to himself, but to society as a whole. Such a system, he declared, is essential to the future well-being of the country.

Comparing the socialistic system of force with the so-called capitalistic system of freedom, President Utley declared that it is impossible for the two to march hand in hand. One must eventually triumph over the other. It is vital that the former dominate, the speaker concluded.

Asserting his belief that federal taxation has reached the saturation point, James A. Emery, counsel of the association, Washington, stressed the need for drastic curtailment in government expenditures. One of the greatest steps to this end, although difficult because of its political aspects, would be in the restriction of expenditures for nonservice disabilitation of war veterans. He cited the absurdities arising from these expenditures, and warned that the trend was toward a still heavier burden in this direction, unless tremendous pressure was brought to bear on congress by taxpayers.

He warned against certain measures likely to come up before congress this winter, and condemned government competition with private enterprise. He pointed to evils which may arise as a result of the government's emergency step into the field of private banking. This has placed the government in position to exert influence not only on business but also society, with a great opportunity for harm. Even after the individual loans have terminated, the effect might continue indefinitely, he declared.

The severity of the times, which has disrupted many organizations, has made it all the more imperative for foundrymen to keep up the personnel and educational work of the association, according to A. D. Lynch, director of personnel, Ohio Brass Co., Mansfield, O., who outlined work accomplished over the past year. He said that the foundry industry in general has felt the results of the past three years more heavily than most others, and that attention to training and the best technique in leadership were essential.

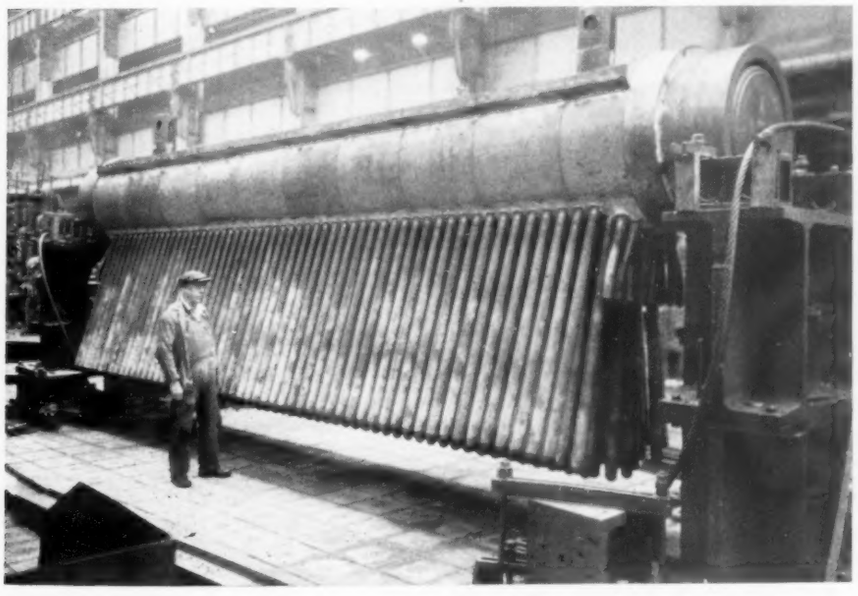
Budget Balancing Essential

Lionel D. Edie, vice president, Capital Research association, outlined business prospects in the light of recent developments.

The unbalanced budget, he said, shakes confidence. With that uncertainty removed, we stand on the threshold of recovery. Conservatives must exert continued pressure to bring about a balanced budget, at the so-called lame duck session if possible. Governmental expenses must be reduced and the era of constantly increasing use of public funds through federal aid must be brought to an end. Otherwise, no hope is in sight before spring, he feared.

An interesting study of the depression effect on employment was given by F. Spencer Baldwin, director of research, National Industrial Conference Board Inc., New York. He gave comparative statistics showing that the mounting unemployment total has been checked. Some of this is due to spreading of work and represents a palliative rather than a cure. A review of the failure of state unemployment plans in Europe was given.

Mr. Baldwin outlined his personal views on an insurance system and recommended that employers antici-



SOMETHING NEW IN BOILER TUBES: One of the seven all-welded, porcupine-tubed mercury boilers soon to be installed in the new mercury-vapor power generating station of the General Electric Co., Schenectady, N. Y.

pate this burden by taking the initiative.

John Lovett, manager, Michigan Manufacturers' association, Detroit, took issue with this conception. He pointed out that in making a comparison between workmens' compensation legislation and the recommended unemployment insurance, two radically different premises arose.

The workmen's compensation was voluntarily advanced by employers as a protection against excessive personal damage suit awards. It resulted in lowered accident rates. Further, it was within the control of employers to regulate and constituted a measurable hazard. Unemployment, on the other hand, is not measurable by any actuarial system. It is not within the control of employers to reduce or abate. Unemployment insurance is a long step in socialization of all industry and any employer-employe system or similar palliative is not recommended, Mr. Lovett declared.

Falling Currencies a Bar to Dumping Orders; Business News of Washington

WASHINGTON—With the passing of another week without action by the customs bureau of the treasury department on the proposal by the American Iron and Steel institute and individual producers that dumping orders be issued on certain iron and steel products, the possibility of such orders becomes increasingly remote.

Reports received thus far by the customs bureau confirm the extremely low price at which such products, and they include practically all finished material, are offered in the United States, but they do not tend to subtantiate dumping as defined by the present tariff law.

F. X. A. Eble, commissioner of customs, states that if the American industry desires protection against dumping or border-line imports, additional legislation will have to be obtained from congress. For one thing, it is almost impossible to prove dumping, due to the effect of depreciated foreign currencies.

No Decision on Investigation

It is recalled that shortly before the election, President Hoover proposed to the tariff commission that it reopen its investigation of certain commodities, including iron and steel, in the light of further depreciation of these currencies. The commission has completed its preliminary study and a report has been made to the full commission by the iron and steel division, but no decision has been announced.

While no official announcement has been made, it is understood definitely that suspected dumping orders have been issued by an appraiser in connection with wire netting from Germany and channels, bars and bands from the Saar basin. These suspected dumping orders are issued by appraisers at various ports of entry and are not promulgated by the bureau in Washington.

It appears certain that appeal will be made to the next session of congress for remedial legislation in connection wth depreciated foreign currencies, but it is recalled that Democrats in the last session obstructed such a measure.

Commissioner Eble points out that all but a few of the 60 complaints of dumping which he is investigating relate the countries now off the gold standard, and hence the fall in exchange constitutes a high barrier to proving charges of dumping.

In the past few weeks 13 industries have presented dumping cases to the bureau, including practically all finished iron and steel products, scrap and manganese and in only one case—that of cement—has a suspected dumping order been issued. This is exclusive of the previously-mentioned report concerning wire netting from Germany and channels, bars and bands from the Saar.

Explains Bond Situation

In connection with dumping bonds which are or may be required, the customs bureau here has made public the following official statement;

"There is considerable outcry against the requirements for customs bonds in dumping cases. This agitation is probably due to a misunderstanding of the requirements and misrepresentation as to the attitude of the customs officers.

"There is not now, and has not been, any greater requirement for dumping bonds than was established in the dumping regulations of 1931. Under the recent orders to appraisers to withhold appraisements, no special dumping bonds were required.

"It is now, and has been, the law for more than 100 years that if an importer desired to obtain possession of his goods prior to the appraisement he must give a bond for their redelivery and these bonds still are required.

"The special dumping bonds are only required after the appraiser has had presented to him sufficient evidence to justify the issuance of a notice of probable or suspected dumping."

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Reconstruction Finance Corp. has authorized a loan of $450,000 to the Tarrant County Water Control and Improvement District No. 1, Ft. Worth, Tex., for the water supply system. Material requirements have not yet been estimated.

The Corporation has authorized purchase of $45,000 worth of bonds of West Monroe, La., for an addition to the city's water works, requiring 450 tons of cast iron pipe.

The Corporation reports that from Feb. 2, the date it began operations, to Oct. 31 the government had loaned $1,397,596,033.55 in cash, of which the borrowers have repaid $253,537,052.56.

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Although it was possible for 150,928 immigrants to come into the United States during the fiscal year ending June 30, only 2503 visas were issued during the year.

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Senator Borah has come out again in opposition to any sales tax or any additional taxes at this time. He believes that the government expense should be cut down rather than increasing the taxes.

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Trade practice conference rules of the furnace pipe and fittings industry have been announced by the federal trade commission.

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Commercial Attache Julian Gillespie, at Istanbul, Turkey, reports that exports from Soviet Russia through Black Sea ports, which register the major movements of Soviet tonnage, for the first nine months of 1932 amounted to 6,864,300 tons, compared with 8,474,334 tons during the same period of last year.

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The interstate commerce commission has suspended until June 15, 1933, the operation of certain railroad schedules proposing to eliminate cotter pins, in carloads and less than carloads, from the list of iron and steel articles between points in official classification territory, which would result in the application of higher class rates.

Abbott Addresses Gray Iron Institute at New York

Declaring that during periods of depression industry makes its greatest progress in technical improvements, which often result in the development of new markets and new uses for its product, Charles F. Abbott, executive director, American Institute of Steel Construction, was a featured speaker at the meeting of the Gray Iron institute in New York last week.

Report of the merchandising committee was presented by Arthur J. Tuscany, secretary of the institute; other reports were given by H. S. Chafee, Builders' Iron Foundry, Providence, R. I., for the finance committee, and by H. B. Hanley for the technical committee.

Acetylene Association Sights Better Business Ahead

THE oxyacetylene industry can look forward to increasing business, for industry as a whole is starting to do the necessary maintenance work to put its house in order and to improve and modernize its productive equipment.

This was the opinion expressed by W. C. Keeley Jr., National Carbide Corp., New York, in addressing the thirty-third annual convention of the International Acetylene association held in the Penn Athletic club, Philadelphia, Nov. 16-18.

According to Mr. Keeley, who is the retiring president of the association, expenditures for machinery and plant facilities during the depression period are estimated to have dropped from an annual average normal outlay of five billion dollars to a little more than one billion.

Edward J. Hayden, central division manager, Linde Air Products Co., Chicago, was elected president of the association for 1933. H. B. Pearson, Compressed Industrial Gases, Chicago, was named vice president; W. E. Cotter, 30 East Forty-second street, New York, was re-elected treasurer; and H. F. Reinhard, 30 East Forty-second street, New York, was re-elected secretary.

Elect New Directors

New directors chosen were: A. J. Fausek, Modern Engineering Co., St. Louis; W. C. Keeley Jr., National Carbide Corp., New York; and Philip Kearney, K-G Welding & Cutting Co., New York. Directors re-elected included: W. H. Ludington, Air Reduction Sales Co., New York; C. A. McCune, *Industry & Welding*, New York; L. F. Loutrel, Shawinigan Products Corp., New York; H. S. Smith, Prest-O-Lite Co. Inc., New York; W. D. Flannery, Harris Calorific Sales Co., New York; and G. B. Walker, Linde Air Products Co.

A novelty, in the form of a full 3-act industrial drama was introduced at the Wednesday evening session of the convention. This method of teaching has been used in Soviet Russia, but hitherto has not been employed in the United States on this scale.

Entitled "The Prosperity Process," and acted by a cast of well-known engineers, this drama recounted the experiences of a company which for three years had been going along without getting any business worth mentioning and then suddenly booked an order for 10,000 parts for an automobile air conditioning system. Elation gave way to despair when the management found that because of the run-down condition of its plant and equipment, it would be unable to make the quick delivery required, unless some miracle were performed.

The oxyacetylene process proved the way out of the dilemma. By this process, the company not only repaired its equipment with little expense, but utilized the process for producing the parts which proved so superior that the company received an even larger repeat order. The process was fully demonstrated on the stage both in the dialogue of the players and in the use of standard equipment. Seats were provided for 2500 guests and the play was given before a packed house.

Waters Is Author

John P. Waters, technical publicity department, Union Carbide Co., New York, was the author of this drama. Actors included T. M. Hamer, W. S. Farr, John J. Crowe, Herbert M. Moss, A. B. Kinzel, E. C. Turner, E. F. Mooney, Wilbur B. Miller, Fred Jodelsohn, Richard F. Helmkamp.

The unique ability of oxyacetylene welding to handle almost any material in any kind of a location is cause for confidence that the future holds increased growth and prosperity for this industry, said James H. Critchett, vice president, Union Carbide & Carbon Research Laboratories Inc., New York. "In some fields we have met difficult competition," he said, "but ours is a process with unlimited possibilities and for every foot lost there is a yard of gain."

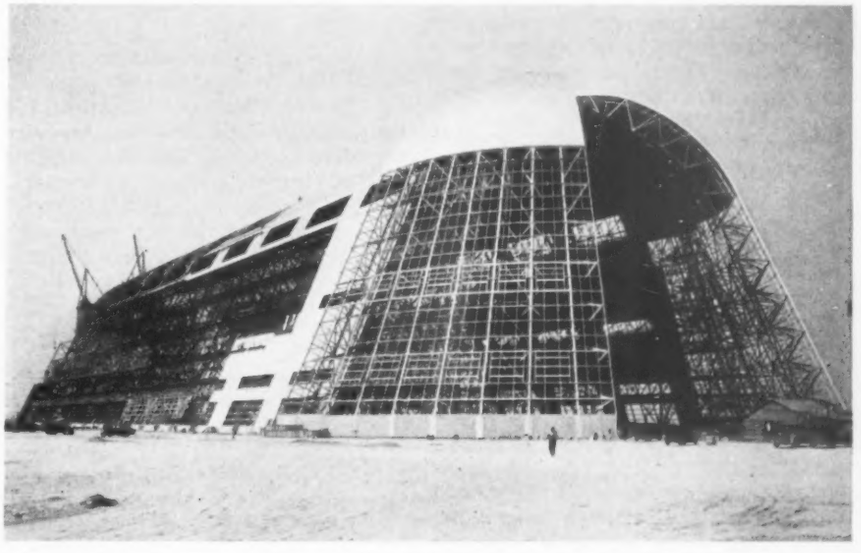
New Steels in Offing

In the age before us, said Dr. Critchett, metals will be used to an even greater degree than now. Within our lifetime steel will continue to be the chief metal employed. Just as stainless steels recently have come to the front, however, other new varieties of steel with improved characteristics will appear. Structures and machines will be put together from a greater variety of steels than is now common.

He called attention to the widening use of aluminum and also to the likelihood that copper base metals will take a larger part in the future. "Oxyacetylene welding has the opportunity to hold the leading position," said Dr. Critchett, "but it will do so only if we successfully solve the problem inherent in new materials and improved methods of construction."

Equally great advances may be expected in the use of the cutting blowpipe as in the use of the welding blowpipe, said Dr. Critchett. Little further development is necessary to extend the field of shape cutting with the torch.

A 77-page report was submitted by the oxyacetylene committee, this recounting all progress in the field of oxyacetylene welding. This report completely sets forth the new nickel-break, X-ray and stethoscopic tests of welds. A large part of the book is devoted to the new A. S. M. E. code covering pressure vessels and pressure



FLAG'S UP ON SUNNYVALE HANGAR: This California home station for Pacific coast dirigibles of the navy is slightly larger than the hangar, or dock, at Akron, O., at which the AKRON *was built and the* MACON *is being completed. This structure is* 1300 *feet long,* 320 *feet wide,* 190 *feet high, requiring* 8500 *tons of steel. The four doors each weigh* 500 *tons. Wallace Bridge & Structural Steel Co., Seattle, took the contract in October,* 1931. *J. H. Pomeroy & Co. Inc., Seattle, erected the steel*

piping. Another section is devoted to welding and cutting in connection with manufacturing and construction.

The report contains new data on welding and cutting of stainless and other alloy steels. It also sets forth the so-called flame machining method of removing defects from steel billets and steel castings, by which smooth grooves are obtained, and at high speeds.

Costs Favorable to Welding

The time is approaching rapidly when every manufacturer of sheet metal products must give more intensive thought to application of welding to meet competition from the standpoint of simplicity, cost and appearance, according to J. J. Fiechter, works manager, Heintz Mfg. Co., Philadelphia. To produce bodies for modern automobiles at present prices would be an impossibility without welding, he declared.

To give an idea of the economical advantages in the production of welded parts, he cited a plant normally consuming between 25,000 and 30,000 tons of sheet steel per year, ranging in gage from possibly 0.025 to 0.078 inch in thickness. This plant has produced, in a normal year, approximately 7,500,000 stampings or parts, of which 95 to 97 per cent have been joined by means of welding, employing 40 to 50 acetylene welders, 20 to 25 arc welders and 80 to 100 spot welders.

George C. Comstock, mechanical engineer, Bethlehem Steel Co., Steelton, Pa., delivered a paper setting forth the manifold applications of the oxyacetylene welding process in steel works maintenance and in steel production. John M. Carmody, editor *Factory and Industrial Management*, New York, reviewed the present trend of rehabilitation and commented that manufacturers had grown to lean too much on the government during the Hoover administration. Under the coming administration, he believed, there would be less leaning on the government and it will be essential for business to attend to its own business.

Vauclain Recalls History

Samuel Vauclain, chairman of the Baldwin Locomotive Works, Philadelphia, was an honorary speaker. He told of hand welding in the early days of locomotive building and recalled the first applications of the oxyacetylene process in this country in 1915 and 1916. Prof. Frank B. McKibben, president of the American Welding society, also was a guest and presided over the industrial drama session.

Welding and cutting in the steel industry was discussed at the technical session on Friday morning. Warren Worthington, consulting engineer, Pittsburgh, who presided at this session, said that one steel company is considering making its next new blast furnace of welded construction.

Sheet & Tube Saves on Coal By River-Rail Movement

Movement of coal to the Youngstown Sheet & Tube Co., Younstown, O., through the new river-rail terminal at Colona, Pa., has begun. The vessel MARY ALICE with the first tow of six steel barges loaded 5000 tons of coal at Nemacolin, Pa., which it delivered to Colona on the Ohio river, 25 miles below Pittsburgh.

Barges were placed along the new electrically-operated docks of the Pittsburgh & Lake Erie railroad and coal was moved into cars of this road and shipped by way of Beaver, Pa., into Youngstown, O. Nemacolin is 75 miles above Pittsburgh on the Monongahela river and Colona 25 miles below Pittsburgh. About 25 cents a ton in freight charges will be the saving, accruing to the Youngstown Sheet & Tube Co., through this co-ordination of river-rail shipments.

Proposes 1% Tax on Value Added by Manufacture

A tax plan as a substitute for present federal excise levies, which would amount to a tax on the value added by manufacture, was proposed at the eighth New England conference in Boston, Nov. 17, by R. H. Whitehead, president, New Haven Clock Co., New Haven, Conn. The tax is 1 per cent on the amount of each transaction whereby the title to any goods, finished or unfinished, passes from a buyer to a seller.

New England manufacturers were advised at the conference to participate in industrial rehabilitation and were told by Ralph E. Flanders, vice president, Jones & Lamson Machine Co., Springfield, Vt., that replacement of obsolete and inefficent equipment frequently reduces costs sufficiently to turn red ink into black.

Opens Mill at Follansbee

Follansbee Bros. Co. Inc., Pittsburgh, is resuming work Nov. 21 at its Follansbee, W. Va., mill. This division of the company has been closed since July 1, when activities of the company were centered at its Toronto, O., plant.

Carnegie Film Is Shown

"Iron Ore to Pig Iron, and Pig Iron to Steel," a film of the Carnegie Steel Co., was exhibited Nov. 10 before the Rotary club of Hillsdale, Mich., by J. D. Macpherson, of the Detroit office of the Carnegie company, of which William B. Weston is sales manager. John H. Frye, of the Detroit office of the Columbia Steel & Shafting Co., explained cold-rolling of steel. W. P. Stumpf, manager of the Allied Products Corp., Hillsdale, presided.

More Companies Hopeful On Outlook for Business

A survey by the National Association of Manufacturers presented at its conference at New York last week shows that 62 per cent of companies reporting find business fair to good, compared with only 50 per cent a year ago.

Seventy-six per cent report prospects for the winter as good or fair, contrasted with 50 per cent a year ago.

The tariff committee of the association approved tariff revision by the tariff commission as preferable to general congressional action. James A. Emery, general counsel for the association, criticized entrance of the federal government into banking, through loans to industries.

Metal Trades Employment Is Fractionally Lower

Metal trades employment in 26 cities in October was 0.4 per cent lower than in September, according to the National Metal Trades association, Chicago. Some substantial gains were registered; 12.3 per cent in Detroit; 39.8 per cent in the tri-cities, Moline and Rock Island, Ill., and Davenport, Iowa; 20.1 per cent in Grand Rapids, Mich. The association also reports metal trades employment in 18 industries in September was 2.3 per cent less than in August.

Mills Consider Equipment

Contracts and inquiries are emanating from the steel industry for replacement of obsolete equipment, states G. E. Stoltz, steel manager of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Such projects are not large compared with pre-depression requirements, but represent a substantial improvement in conditions, according to Mr. Stoltz.

Identify Standard Fencing

Washington—All producers of woven wire fencing who have adopted the simplified practice recommendation for this industry have agreed to identify these simplified lines in their catalogs and other trade literature.

Industrial Men in the Day's News

Dr. William David Coolidge, Director of Research Laboratory, General Electric Co.

FOR 27 years he has been with General Electric, recently as senior associate director, co-operating with Doctor Langmuir.

HE has contributed to atomic hydrogen welding, drawn tungsten, the vacuum tube, and improved X-ray tube.

THE Edison, Hughes, Rumford, Horace N. Potts and Lewis Edward Levy medals are his; also the Washington Award for 1932.

DR. WILLIAM DAVID COOLIDGE, who on Nov. 1 succeeded Dr. Willis Rodney Whitney as director of the research laboratory of the General Electric Co., Schenectady, N. Y., has been associated with General Electric over 27 years and comes to his new post fortified with an impressive experience and background.

Born in Hudson, Mass., Oct. 23, 1873, Doctor Coolidge attended Massachusetts Institute of Technology, being graduated with a B. S. degree in 1896. Then followed study at the University of Leipzig, where he became a Ph. D. in 1899. Prior to going with the General Electric Co. laboratory Doctor Coolidge was assistant in physics, instructor in physical chemistry and assistant professor of physico-chemical research at the Massachusetts Institute of Technology.

Persuaded by Doctor Whitney, he went to the General Electric laboratory in 1905 and became assistant director three years later. In 1928 he was made an associate director, a title also held by Dr. Irving Langmuir. Through the work of these two scientists many notable advances were accomplished, including drawn or ductile tungsten, atomic hydrogen welding, improved X-ray tubes, the gas-filled incandescent lamp and the modern high-power electronic or vacuum tube.

Among the honors which have come to Doctor Coolidge are the Edison medal of the American Institute of Electrical Engineers, the Hughes medal of the London Royal society and the Rumford, Horace N. Potts and Lewis Edward Levy medals. The Washington Award for 1932 was for "meritorious service to mankind."

He is a member of the American Chemical society, American Electrochemical society, American Physical society, American Institute of Electrical Engineers, American Academy of Arts and Sciences, and Washington Academy of Sciences. He is also an honorary member of many other societies.

C E. STEPHENS, formerly commercial vice president in New York of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been elected vice president. He will remain in New York.

N. G. Symonds, formerly commercial vice president at Chicago for the Westinghouse company, has been elected vice president in charge of sales with headquarters at East Pittsburgh. Mr. Symonds formerly was identified with the Westinghouse Church Kerr Co. and the Westinghouse Machine Co. prior to their absorption by the Westinghouse Electric & Mfg. Co.

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J. Ralph Davis has been appointed manager of the Niagara Falls, N. Y., plant of the Vanadium Corp. of America, to succeed Charles S. Proudfoot, who died Oct. 29. Mr. Davis formerly acted as assistant to Mr. Proudfoot.

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Dr. Irving Langmuir, who as noted above in the sketch of Doctor Coolidge, is an associate director of the General Electric Co. laboratory, Schenectady, N. Y., will receive the Nobel award in chemistry for 1932 in Stockholm on Dec. 10.

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P. F. McDonald, president of P. F. McDonald & Co., Boston, sailed Nov. 11 for a 3-month business trip to England, Germany, France, Belgium and Sweden, in which countries mills of the P. F. McDonald Steel Co. are located. It is the opinion of Mr. McDonald that business not only is on the upward trend but has also reached the point where it will improve faster than generally expected.

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C. M. Konkle, of the Federal Shipbuilding & Dry Dock Co., Kearny, N. J., has been named auditor of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., succeeding F. B. Winslow, resigned. Mr. Winslow went to Birmingham when the United States Steel Corp. took over the Tennessee company 25 years ago. He had been with the Illinois Steel and American Steel & Wire Companies. He is 68.

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W. F. Pravel, 4879 Cote Brillante, St. Louis, has been appointed district sales representative for the American Hollow Boring Co., Erie, Pa. Mr. Pravel will represent it in

southern Indiana, southern Illinois and the St. Louis district.

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Hugh Benet, since 1927 manager of the Worthington Pump & Machinery Corp. plant at Holyoke, Mass., has been appointed manager of its works at Harrison, N. J.

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Michael T. Tighe, for many years president of the Amalgamated Association of Iron, Steel and Tin Workers, Pittsburgh, has been re-elected.

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William H. Warren, vice president in charge of operations for Lukens Steel Co., Coatesville, Pa., has resigned effective Jan. 1. He has been associated with this company since 1926, and previously was general manager for Trumbull Steel Co., Warren, O.

Here and There in Industry

EX-CELL-O AIRCRAFT & TOOL CORP., Detroit, has appointed Central Tool Sales Co., 602 West Randolph street, Chicago, its representative in Chicago territory for all its products except the precision boring machine line. William H. Scheer, formerly with Ex-Cell-O in this territory, has become a member of the new sales organization, which formerly was known as the Paddock-Graven Co. Dean Machinery Co., 80 East Jackson boulevard, Chicago, has been given charge of sales of precision boring machines and Krueger-Wayne tool division products in Illinois, northern Indiana, Iowa and southwestern Michigan.

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Fort Worth Structural Steel Co., Fort Worth, Tex., has been appointed distributor in western Texas for products of the Page Steel & Wire Co., Bridgeport, Conn.

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American Electric Furnace Co., 27 Von Hillem street, Boston, has appointed Thompson Tool & Supply Co., Odd Fellows building, Indianapolis, its representative in Indiana.

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Stephens-Adamson Mfg. Co., Aurora, Ill., has acquired United States rights to manufacture and distribute the English Redler conveyor, claimed to convey horizontally, vertically, up inclines and around corners.

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Federal Pressed Steel Co., Milwaukee, is completing a boiler plant at its works, 714 East Keefe avenue, under direction of O. H. Henschel, consulting engineer. The new plant is high pressure type designed for high efficiency through use of measuring and controlling instruments.

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L. R. Flori Co., St. Louis, distributor for the Allegheny Steel Co., Brackenridge, Pa., has established a southwestern sales office in Tulsa, Okla., in charge of R. D. Gwynne, formerly with Joseph Greenspon's Sons Iron & Steel Co., St. Louis. The new office will serve the oilfield trade in alloy steels and other products.

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Stacey Bros. Gas Construction Co., Cincinnati, engineering and constructor of gas holders, gas plant equipment and special fabricated plate work, has moved its New York office to 24 State street, in charge of William S. Guitteau, eastern manager, covering the New England states and Atlantic seaboard. The company has completed construction of three Stacey-Klonne piston type gas holders, the largest of which is a 6,000,000-cubic feet holder at Syracuse, N. Y. This is the largest of this type of holder in the world. Its erection is recognized by the Massachusetts Institute of Technology as one of the twelve foremost engineering achievements of the year.

Obituaries

ROBERT S. BROOKINGS, 82, known to the iron and steel industry as chairman of the price-fixing committee at Washington during the World war and founder of the Brookings Institution and the Brookings School of Economics and Government, died at Washington, Nov. 15. At one time he was president of Washington university, St. Louis. On his price-fixing committee during the war sat the chairman of the war industries board, fuel administration, tariff commission, federal trade commission and representatives of the navy, war, agricultural and labor departments.

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John W. Brown, 72, tank manufacturer at Nappanee, Ind., and long prominent in local politics, died recently.

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Lewis H. Jones, until his retirement president of the Detroit Copper & Brass Rolling Mills, Detroit, died at Detroit, Nov. 1.

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Harry F. Woernley, 50, formerly assistant to the general manager of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., died at Wilkinsburg, Pa., Nov. 14.

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Elmer E. Stone, 77, general purchasing agent of the American Steel & Wire Co., Cleveland, until his retirement a year ago, died at Cleveland, Nov. 12. For 49 years he was associated with the American Steel & Wire Co., the last 30 as general purchasing agent. Mr. Stone was a member of the American Iron and Steel institute, the Ohio Society of New York and the Union club, Cleveland.

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Charles S. Peck, 80, co-founder of the Danbury Machine Co., Danbury, Conn., in 1872, and also identified with the R. A. Belden Machine Co., Danbury, and Winchester Rifle Works, Bridgeport, Conn., died at Danbury, Nov. 8.

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Arthur Russell Purdy, 49, president and a director of the A. R. Purdy Co. Inc., New York, dealer in iron and steel, died recently at his home at Rutherford, N. J. Mr. Purdy also was president and a director of Hobson, Houghton & Co., New York.

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Morris Knowles, 63, president, Morris Knowles Inc., consulting engineering firm, Pittsburgh, died at Pittsburgh recently. He was a graduate of the Massachusetts Institute of Technology and during his residence in Pittsburgh the past 30 years had been prominent in engineering activities.

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Rupert H. Gilbert, 51, mechanical engineer, Milwaukee Reliance Boiler Works, Milwaukee, died Nov. 11. During the war he was construction engineer of the Newport Chemical Co., Carrollville, Milwaukee, and superintendended the construction and equipment of plants valued at upward of $2,500,000.

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Max Solomon, 75, widely known in the iron and steel scrap industry, died at Beaver Falls, Pa., Nov. 16. Mr. Solomon was born in Russian Poland in 1857 and came to this country in 1875. He settled at Beaver Falls, Pa., and was identified with the J. Solomon Co. until 1892 when he entered business for himself. In January, 1923, he organized and incorporated the Max Solomon Co., with headquarters in Pittsburgh. Mr. Solomon was widely known for his philanthropic activities.

Farrell Urges Broad View

"National interests must be placed above purely private ones, and conversely individual advantage will best result from community welfare," declared James A. Farrell, former president, United States Steel Corp., in conducting a seminar on foreign trade at the school of foreign service, Georgetown university, Washington.

MIRRORS OF MOTORDOM

DETROIT

DUE largely to Chevrolet, Plymouth, Dodge and Buick, more steel is moving into the Detroit area than at any time since spring. This insures that November will carry on the improvement recorded successively by September and October, in point of shipments.

Other manufacturers are disposed not to rush their new models, as they can begin to assemble in December and still supply most of their dealers by January show time. Hence, while there appears to be a slightly easier situation now in regard to bookings, practically all of the business that fails to mature in November will accrue to December, and the aggregate for the two months will approximately meet recent expectations.

With Plymouth attaining its objective of 1200 units daily, five days a week, of its new six, Chevrolet actually beginning assemblies of its new six and ahead of schedule on some parts, the Dodge six under way, and Buick also asembling its new line, the peak of pre-show production is nearing. Probably Plymouth will be easing off somewhat as Chevrolet gets into its stride. Output in November thus promises to top the estimated 50,270 of October. But the movement of steel for this production is probably past its peak.

Cautious About New Year

January activity in the automotive industry still is a speculation, but unless the general business situation develops an unexpected spurt it may be light. There always is a lull after manufacturers have stocked dealers' floors and before the verdict of the shows is in.

Even Chevrolet is inclined to be a little more cautious; while it has scheduled 110,000 units by Feb. 1, it has released material at this time for 80,000, leaving 30,000 units more or less tentative for January.

Ford continues a weak reed for the steel industry to lean upon, but by early December should again be in the market. Current production of both the four and the eight is averaging about 1200 units a day, three days a week, and receipts of material are scanty, apparently based upon termination of the run shortly.

In view of the development work already put in on a six and the general expectation that there will be a six in the Ford line by show time, it appears hazardous to forecast that there has been a switch to a low-price straight eight, but this is the report which has received wide currency in Detroit the past few days.

Delay Ford Re-Tooling

It is said that Mr. Ford has personally intervened in the situation and is faithful to his instinct to produce one line and attempt with it to mop up the lowest-price field. Certainly, an ambitious re-tooling program designed largely for the production of a six has been held up. It would be consistent with every model change since Model T were Mr. Ford to step in and reverse many decisions of his engineering staff, and this is the story now heard in Detroit.

This eight would be priced at less than $400, Detroit, undercutting by a wide margin the ever-broadening competition in what might be designated the $500 market. Until the advent of this rumor of an extremely low-priced eight, it was generally expected that the Ford line would consist of a low-priced six and a revised eight, probably a straight one, slightly larger and slightly higher priced than the present V-8.

Of one thing Detroit is certain —that Ford is leaving no stone unturned in an effort to reduce costs. Experimental work is being done with grades of sheets below full-pickled for body panels and fenders. The comparatively few stainless steel parts that survived the transition from Model A to the present line are under scrutiny, and a substitution of chrome plating is a possibility. As related a week ago, wire netting is being eliminated from Ford tops.

If Ford is to display the new models by January show time, a start early in December is imperative. When some Murray Body employes were laid off recently it was intimated that they would be returned in several weeks on new Ford jobs. The Ford organization continues its policy of attempting to farm out as much as possible of its parts business, and the new models probably will contain the smallest percentage of Ford-made parts of any Ford ever offered.

Continental Motors Corp., which is scheduling 500 of its new low-price jobs in December and 2500 in January, has incorporated the Continental Automobile Co. to produce and market the new models.

Graham is buying material for 2000 jobs. Recently it adopted a bonus system whereby salesmen get an extra $10 for every car sold prior to Dec. 15.

Studebaker has curtailed its schedule and is holding up material, evidently planning to produce fewer cars than originally contemplated prior to the January shows.

Speed Plans for Auburn

Nearly 50 draftsmen are at work on plans for the new Auburn. . . . Essex is adopting for the terraplane a cast steel camshaft, something many manufacturers—including Ford —have been working on. . . . The new ventilation system for Fisher bodies is a division of front door windows, one half pivoting and the other half raising and lowering. . . . Amplex Mfg. Co., subsidiary of Chrysler, has licensed Skinner Motors Inc., Detroit, to make floating power mountings for the Ford four. . . . Chrysler appears bent on shorter wheelbases, the Dodge six being reduced from 114 to 111¼ inches, after Plymouth was cut from 112 to 107¾.

EDITORIAL

Paring Capital Structure Is Essential to Profits

WE URGE all of our readers who are identified with or interested in the management of an industrial company to read carefully the series of three articles on "Profits in the Steel Industry," which begins on page 11 of this issue.

While it is written for the primary steel industry (because comparative figures for steel producers are readily available), the analysis, interpretation and conclusions are applicable to many establishments in the secondary division of the steel industry and to numerous manufacturing units classed as important customers of steel producers.

It is not our intention here to reveal in advance the arguments presented by the author, other than to say that he shows clearly the relation of the factors of depreciation and depletion to profits. This involves a study of comparisons of various capital charges in relation to capacities, sales, etc. and also implicates the vexing question of "excess capacity" and the train of competitive evils that are popularly ascribed to "excessive" capacity. In conclusion the author recommends certain steps in the realignment of the steel companies which he believes are necessary if they are to get back to a status of satisfactory profits.

Continued Deficits Point to Necessity of Scaling Down to Profitable Basis

The timeliness of this analysis is emphasized by the recent reports of steel company earnings for the third quarter. On the basis of returns for ten important corporations, it was estimated (STEEL, page 11, Oct. 31 issue) that the losses for the entire producing industry during the three months averaged $17 per ton of steel ingots actually produced in that period. If figures were available, similar pictures of discouraging losses could be presented for practically every major group in the iron, steel and manufacturing industries. From private information it is known that in several groups, every individual company was in red ink during the past summer.

In the main, the attitude of management during the present period of depression has been sound. A common fault among many executives was tardiness in getting down to the serious job of house cleaning. However, in most cases, once the responsible heads of companies were convinced of the acuteness of the situation, they acted promptly and effectively.

If a record were available of the tactics employed generally throughout industry, it would be found that first attention was given to items of expense that are easiest to curtail. Reductions in personnel, lowering of wages, abandonment of branch offices, concentrating of operations in the most efficient and most favorably situated plants, curtailment of contributions to the less deserving institutions, and general weeding out of red tape and lost motion were the steps taken by management in most instances.

Efficient Operation Is Futile Gesture Unless Capital Also Is Used Efficiently

However, after all of these and other retrenchments had been put into effect—in many cases with unbelievable thoroughness—the majority of executives found that they still were short of their goal of profitable operation. Many presidents, having succeeded in effecting economies and developing efficiency to a high degree, came to the realization that their house cleaning activities in connection with the control of current operations would not alone carry their companies back into black ink. Beyond efficiency in plant and methods, lay the more difficult task of readjusting the capital structure.

Practically all of the larger corporations and many smaller ones, which either expanded too rapidly or entered the depression before they could retire heavy debts incurred in prosperous years, now are confronted with this problem. The fact that in numerous instances the present management has to pay for the errors of judgment of its predecessors in office does not aid in the solution. The necessity of reducing the burden of excessive capitalization, whether it be in the nature of too much stock, in the form of obsolete or poorly situated plant or equipment, or in large investments frozen in land, mines or other holdings for future use, is a stern reality to dozens of important corporations.

The job of scaling down a top-heavy capital structure is difficult and it takes time. Those who read Mr. Newton's articles will be convinced of the desirability of an early start, or if they have already started, of the need of haste in deflating overhead.

THE BUSINESS TREND

Seasonal Factors Tend To Slow Pace of Business

INDUSTRIAL activity unquestionably has lost some of the acceleration it manifested in September and early October. Monthly figures for last month continue to reveal slighter gains than were recorded in September. The weekly barometers showed a slowing down in the latter part of October, and a continuation of it in early November.

How much of this is due to the campaign or the election and how much to the seasonal year-end easing off is difficult to determine. Col. Leonard P. Ayres, in his monthly survey of business, states positively that "the conduct of the political campaign has rather definitely retarded the business improvement that gained vigorous momentum last summer." Other authorities concur in the view that the present dullness is traceable in part to the campaign.

However, the recessions that have occurred in several important lines of business are clearly seasonal. Production of soft coal has been tapering off from a seasonal peak in mid-October. The high point this year was a week earlier than in 1931, several weeks earlier than in 1930 and almost simultaneous with the peak of 1929. However, the gain through the summer and early fall in 1932 was more pronounced than a year ago, so that the downturn in October was not unexpected.

Freight car loadings also touched a high point in mid-October, from which it is receding rather rapidly. In the week ending Nov. 5, all of the gains of October had been wiped out. This is seasonal, inasmuch as similar, or even sharper, recessions were recorded in the same weeks of 1931, 1930 and 1929.

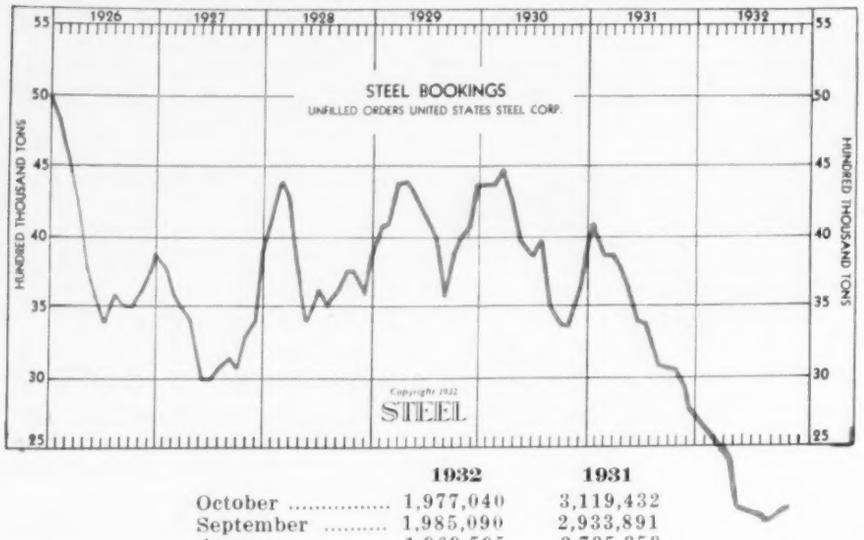
Strength in Cotton, Grain and Metal Prices Helps Commodity Trend

Meanwhile an encouraging show of strength in commodity prices has developed. Prices of cotton, rubber, corn, wheat, copper, zinc, lead and tin advanced in the week following the election. However, many commodities remained unchanged, and a few continued to drift downward. While the trend of commodities as a whole still is uncertain, the strength of cotton, grains and metals more than offsets softness in other directions.

Steelmaking operations have been holding recent gains remarkably well, due in a large measure to timely support from the automobile industry. Ability of steel to hold its present rate will depend upon the demand from railroads and building construction. A fair tonnage of shapes for public buildings is in prospect.

1931
Nov. 1 .....$8.08
Oct. 1 ..... 8.29
Sept. 1 ..... 8.49

1932
Nov. 1 .....$6.97
Oct. 1 ..... 7.28
Sept. 1 ..... 7.17



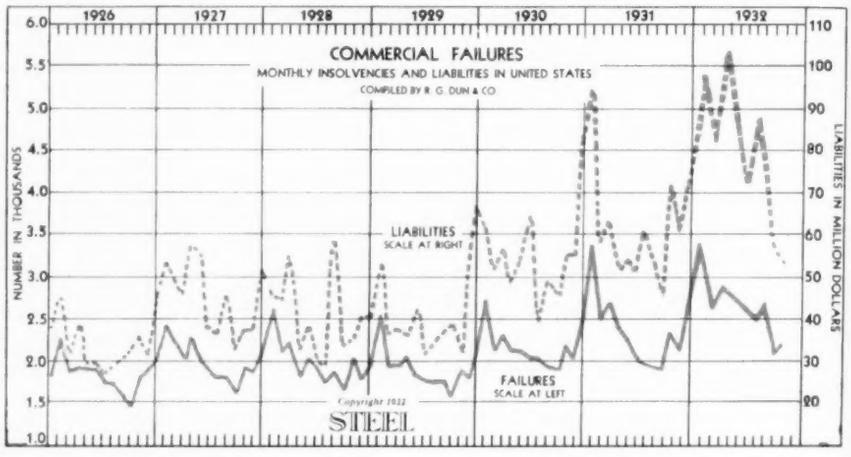
	1932	1931
October	1,977,040	3,119,432
September	1,985,090	2,933,891
August	1,969,595	2,735,353

Steel Bookings Gain for Third Consecutive Month

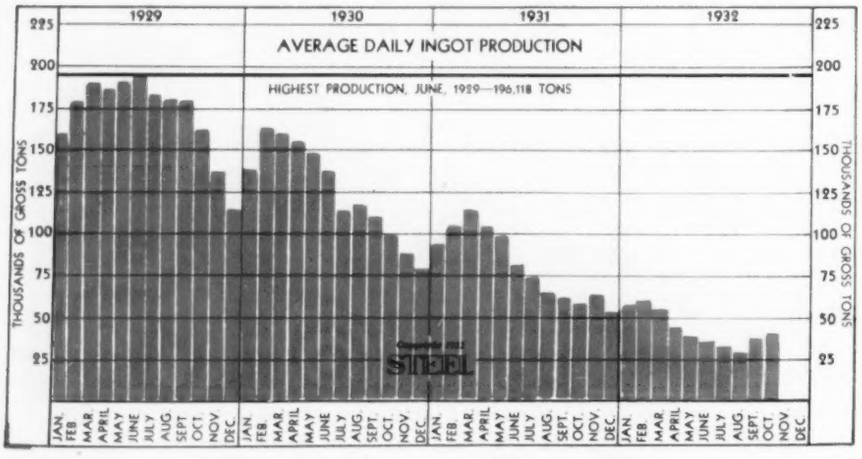
The backlog of unfilled orders of the United States Steel Corp. gained 11,950 tons in October and at the end of the month totaled 1,997,040 tons. This is the third consecutive month in which the corporation has reported a slight increase and in each case the gain has been less than 1 per cent. At the end of October last year bookings totaled 3,119,432 tons compared to 3,481,763 on Oct. 31, 1930.

Commercial Failures Under Year Ago; Liabilities Down

Although the number of commercial failures in the United States during October registered a slight gain over the preceding month, with that exception the number of defaults were considerably less than for any month back to November of last year. According to the records of R. G. Dun & Co. the total for the current month was 2273 compared to 2182 defaults for September and 2362 for October, 1931. Total liabilities for October involved $52,869,974 compared to $70,660,436 a year ago.



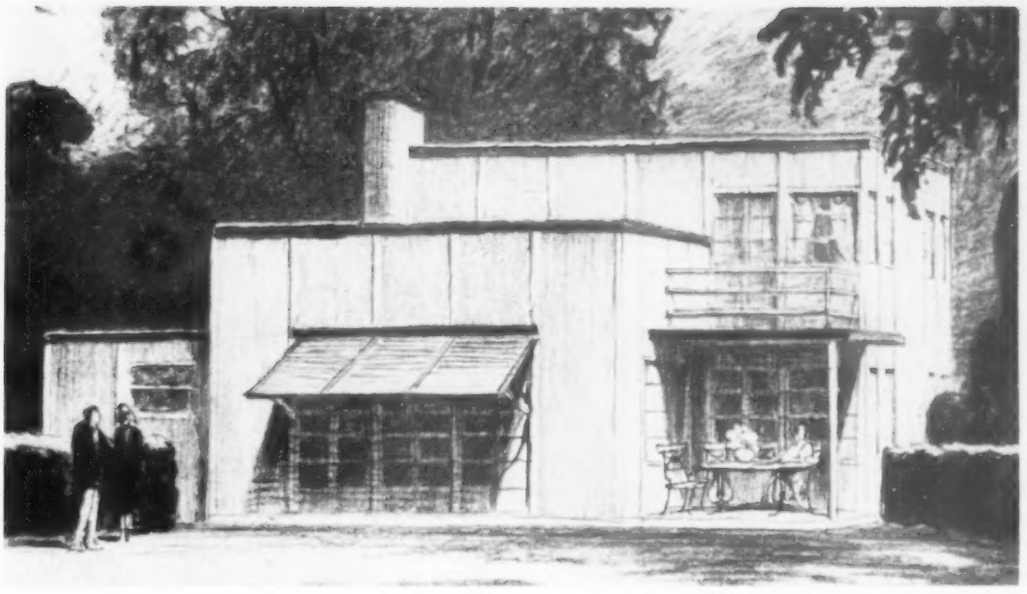
Number		Liabilities	
Oct., 1932	2,273	Oct., 1932	$52,869,974
Sept., 1932	2,182	Sept., 1932	56,127,634
Oct., 1931	2,362	Oct., 1931	70,660,436



	1932	1931
October	41,098	58,896
September	37,502	59,439
August	30,830	66,032

Steel Ingot Production Shows Continued Improvement

The average daily production of steel ingots during October was 41,098 gross tons, which was at the operating rate of 19 per cent. This is the second consecutive gain in the daily output, September having gained 21.6 per cent over the previous month for a rate of 37,502 tons. Calculated output of all companies was 1,068,550 tons in October, compared with 975,061 in September and 1,590,180 gross tons in October last year.

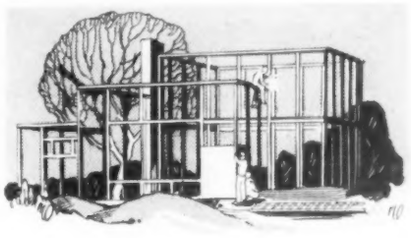


ARCHITECTS drawing of six-room steel house using enameled sheet steel walls. The house is now erected at Hazeltown, Pa.; design was evolved by Holden McLaughlin and associated architects

ENAMELED SHEETS OFFER ADVANTAGES FOR SMALL STEEL BUILDINGS

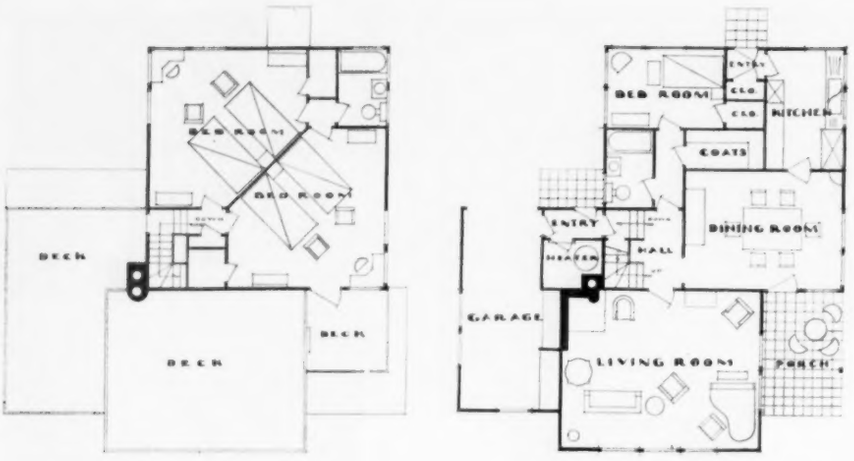
ONE-story all-steel houses of six rooms, porch and garage are being designed and several already erected at a cost of $3000 each. Frame is of steel, with walls and partitions of enameled sheet steel. Such a dwelling requires approximately 6-7 tons of steel, about half being sheets, the remainder framing, fastenings and miscellaneous needs. The design is simple, as shown by accompanying illustrations. A similar 2-story all-steel dwelling is designed to cost $6000 to $7000.

Bernard J. McGarry, New York architect, pioneer in the designing and planning of all-steel dwellings and commercial structures, and design counsel for the Vitreous Enamel & Stamping Co., New York, is collaborating with several leading architects of New York who are designing low-cost all-metal family residences. Mr. McGarry declares that experience in planning all-steel small structures for residence purposes has revealed a reluctance on the part of designers to abandon entirely methods long identified with the use of older materials, such as wood and masonry. Too often there has been a tendency to imitate these materials in metal, frequently resulting in faulty design and working plans unsatisfactory for the fabrication of steel with the ultimate goal of economy and utility. Leaders in steel small-house research now have reached the opinion generally that design must be primarily for the use of steel, with its attendant ease and simplicity of fabrication and erection in both frame and walls. Designs involving the enameled sheet walls are of the simple, straight-line type, much in vogue with the current so-called modernist German architecture.



In enameled steel sheets for exterior and interior walls, builders have apparently found the lowest priced metal material now available which meets all demands. Cost is likely to be a paramount factor in small-family buildings during the next few years and enameled sheet steel lends itself to lower prices, both in fabrication, erection and general upkeep.

Close co-operation between the architect and enameling shop is important at every stage of development. Details of fabrication to assure speed and simplicity in erection, place the main responsibility on the designer and enameling shop. Sheet steel is fabricated before the stock goes to the enameling ovens, including all operations such as punching, stamping, shearing and crimping. Once the work is enameled, fabrication is out of the question, and each section is ready to take its place in the frame. The importance of the enameling shop is such that leaders in the design of all-steel buildings are advocating that such shops have separate organizations for handling this work. Several of the larger enameling plants have organized along these lines. For exterior walls



—Courtesy The American Home

Upper and lower floor plans of steel house shown on preceding page. Note the efficient use of restricted space on upper floor

16-gage sheets are used while for ornamental and special work, 18-gage is popular. Interior walls and ceilings are generally of 20- and 22-gage. While no new enameling methods of note have been brought out as necessary for the employment of this material in houses, special care is exercised in the finishing of outside wall enameled sheets as these members naturally would likely be the first to show any defects. Wall sheets, therefore, are subjected to slightly higher oven temperatures with close attention to heats and length of baking.

Sheets Bolted Together

Properly-designed working plans for the shop result in little or no waste in fabrication, the size of the sheet depending largely on design. Panels 4 by 10 feet are frequently used without evidence of buckling or waviness. Bolts and screws are used as fastenings, the former favored. Rivets are not used generally. Welding is not feasible after enameling. There are few restrictions in designing, but such should be planned especially for the use of steel. No masonry or moisture being involved, speed in erection is possible without skilled labor, another important element entering into costs. Over-lapping joints with an exposed crimp are favored by one eastern designer, a leader in this field for several years, who also favors a light framework of angle frame steel.

Since enameled sheets for both interior and exterior use are available in a wide variety of colors, decorative problems are simplified. A filler of insulating material, several varieties having proved satisfactory, is used between the wall sheets, and helps to keep the building cool in summer and warm in colder weather. Radiators are recessed into the walls.

An all-steel dwelling, properly designed, has a salvage value of 90 per cent. It can be dismantled and moved to another site, incurring comparatively little expense other than the cost of erection and the installation of plumbing, heating and electrical work. While simplicity in design lends itself to lower costs, the architect is not restricted as to plans, although leaders in this field believe that he should remember he is working with steel and not wood or masonry. Upkeep and cleanliness are simplified, since all walls can be washed with soap and water.

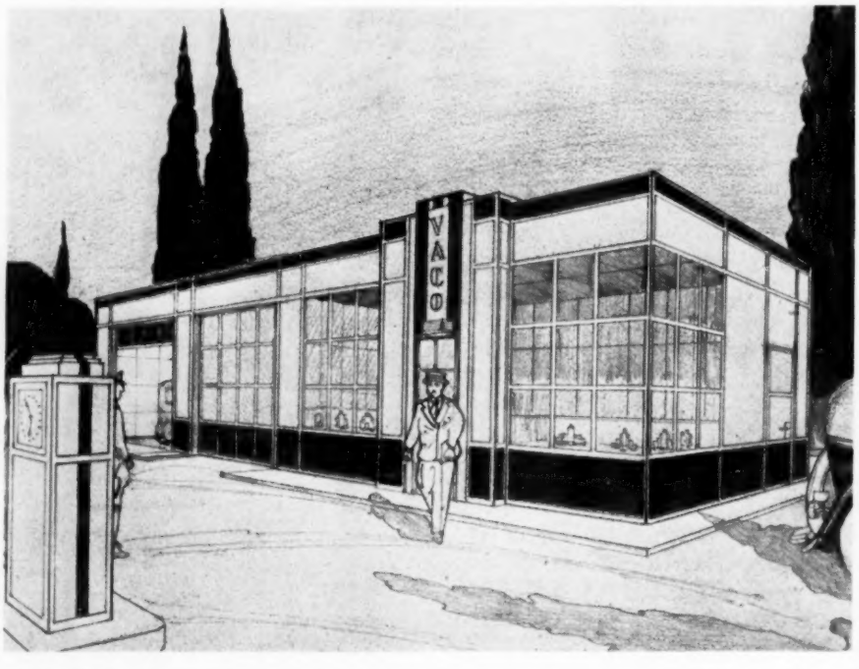
Enameled steel sheets are included among the materials approved for the proposed building programs which looked toward the elimination of the slum districts in New York and other large cities, the use of which would have a stimulating effect on their popularity in other directions.

A wider use of enameled steel sheets has come about for decorative purposes and in retail merchandising fixtures, especially in chain stores. Until fairly recently this material has been restricted mostly to kitchen equipment, bathroom fixtures, wall and roofing tiles and wainscoating. With the development of the enameled sheet for exteriors has come a pronounced increase in its use for gasoline filling stations in a wide variety of color schemes, concession stands, store fronts and chain store counters and shelving. In the case of filling stations, it is becoming increasingly popular, enhanced by the fact that the unit has a high salvage value and can be moved at a low cost to more desirable sites on changed lanes of automobile traffic.

Color Attracts Customers

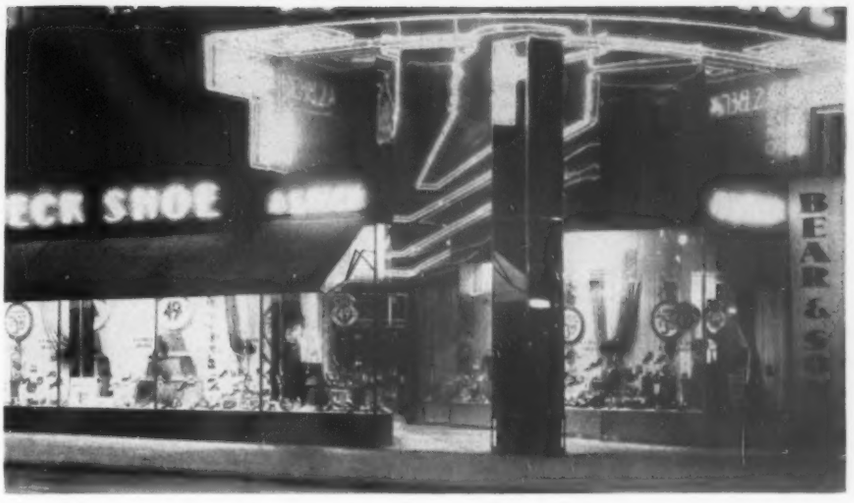
One of the largest shoe store chains has recently adopted enameled sheets for fronts. Distinctive color combinations lend such fronts to uniform advertising value in various locations. Enameled sheets are also growing in use for elevator cabs, door frames and larger building exterior decorations, including theaters.

The building industry has been slow in the past to adopt new materials which offer quicker methods of construction, but changed economic conditions indicate some of these are about to be given a more serious trial. Need of less expensive construction is recognized by the lumber interests, which are considering houses that



Architect's conception of a simple, efficient and decorative design for filling stations, major part of which is of enameled sheets in different colors

may be built in sections at the mill. Lightness in weight is desirable in pre-fabricated material, allowing ease in transportation, and steel sheets meet this requirement. Cutting and fitting of materials on the job, always a costly procedure, is largely eliminated by shop fabrication. Architectural character and merit need not be sacrificed, resulting in dull and monotonous structures, but, to avoid this, co-operation of the architect who has made a study of the possibilities of steel in the small dwelling is essential. In the final analysis, the small-home builder, limited in funds, must be sold not only on appearance, but also on upkeep, length of life and on the hundred small details of a personal character entering in the home.



Enameled steel sheets in tangerine red and canary yellow, combined with neon lighting, provide an eye-arresting appearance to this revitalized store front

Tax Applies on All Lubricating Oils

STEEL companies and other industrial plants are required to pay the recently imposed federal tax of 4 cents per gallon on all lubricating oils purchased and used for lubrication purposes. An oil possessing both lubricating and nonlubricating uses is taxable unless it is put into a channel of consumption or distribution for a use other than that of lubrication. In the latter case, the buyer must certify the use to the seller.

Greases, on the other hand, are not taxable when they meet a certain penetration test, for example, if (1) of a worked consistency of less than 390 penetration units, or on unworked consistency of less than 360 penetration units, by the method of test of the American Society for Testing Materials, D-217-27-T and (2) free from oil or comprising oil and a soap or a mixture of soaps or of soaps and other substances.

Many of the softer consistency greases do not come under these specifications. Liquid greases or oils which flow freely and which are made up of mineral oil with a certain percentage of grease are taxable at 4 cents per gallon or the equivalent in cents per pound.

The present market on lubricating oils of the black type, which are used for lubricating purposes throughout industry ranges from 6 to 12 cents a gallon, depending upon the grade and quality. To this price range, the tax of 4 cents a gallon must now be added. On the other hand, the price of grease ranges from 6 to 8 cents a pound with no tax to be added.

Industrial oils on which the tax does not apply, according to Treasury Decision No. 4339, amending article 11 of Regulation 44, issued July 16, include electrical transformer oils, cordage oils for the manufacture of twine and rope, wool oils for the textile industry, soluble oils for use in cooling, electrical switch oils, oils for absorbing gases such as in cokeplants, agricultural spraying oils, old oils for use in foundries, brick plants and other industries, steel and metal tempering oils, floor oils, steel and metal quenching oils, oils for the manufacture of ink, oils for use in hydraulic systems, paint oils, oils for use by ships in allaying stormy waters, impregnating oils for hydraulic packing and similar products, insecticides and some other oils.

Section of a modern grocery store interior with porcelain enameled shelving and counters, indirect illumination being an integral part of the design

Will Show Motor Taking Power from Atmosphere

A motor, which is said to draw its power from the surrounding atmosphere, is to be shown by the Cochrane Corp., Philadelphia, at the National Exposition of Power and Mechanical Engineering in New York, Dec. 5-10. It is a thermodynamic device and operates continuously on a temperature head which generally is available and which is comparable to that realized in Claude's sea water thermal power plant experimented with near Santiago, Cuba, a few years ago at a cost of some millions of dollars.

While the present device approaches perpetual motion in that it uses no external supply of power, as did the Santiago plant, it is not put forward as a rival of steam turbines, oil engines or water wheels. Rather the exhibit is designed to direct attention to unsuspected scientific possibilities which await only development.

IMPROVING OPEN-HEARTH FURNACE DESIGN

By WILLIAM C. BUELL JR.

Part II Back and Front Walls

(Eighth Article of Series)

THAT portion of the rear wall of an open-hearth furnace opposite the doors which extends about the length of the hearth and occupies the vertical space between the foreplate line and the upper side of the skewback brick is known as the back wall. In furnaces of American design the back walls fall into three classes:

First:—The original type of vertical back wall similar to, and generally symetrical with the front wall, to the center line of the furnace, the lower portion of which is protected and renewed to some degree by the use of ground magnesite and/or dolomite as used in developing or patching the furnace hearth. For the purpose of terminology this type is called "straight." The principal details of the back walls of the furnaces under analysis are shown in Fig. 17, and only those of furnaces A and F are considered as straight. It should be noted that all back wall sections are considered as on a line approximately bisecting the first set of buckstays on either side of the center line of the hearth.

Second:—The full sloping back wall, designated "sloping," is the invention of S. Naismith.* As defined in the patent specification, it is a wall sloping outwardly from bottom to top and consisting of a corbeled refractory wall upon which ground magnesite or dolomite will lay when thrown thereon. Thus, the inner finished surface of this type of back wall is angled to that of the repose for the material used. The actual angle developed is probably about 45 to 50 degrees from the horizontal. This type of wall is a valuable contribution to open-hearth design. Its use has greatly increased the life of the wall itself, the skewback brick and the rear portion of the roof which used with the straight wall receives severe punishment under use and requires frequent renewal. Its use also permits the maintenance of a wider hearth than is possible with the older type. The sloping back wall is shown incorporated in furnaces D and H to O, inclusive. The full sloping back wall usually is incorporated in all new construction.

Third:—The sloping back wall has proved of such value that many older furnaces have been rebuilt to include it. However, in the rebuilding of old furnaces, or in the addition of new furnaces in existing plants, it has not always been possible to incorporate the full sloping back wall on account of building or other limitations. Accordingly, there has come into use a modified form of sloping back wall, designated "semisloping" in which the back wall is angled outward as far as possible, and is continued from the top of the angled portion as a vertical wall to the line of the skewback brick. The semisloping back wall is found in furnaces C, E and G in Fig. 17.

The angles ascribed the inner sloping portions of the back walls of all the furnaces (Fig. 17) are taken from the original drawings and therefore represent the designer's ideas of how the walls will develop under use. As will be seen from Fig. 17, the angles ascribed vary through wide limits whereas, actually the angles will be within close limits.

Factors in back wall development involve refractories, their cost, and the heat flow through them as now designed and installed. Examination of Fig. 17 will show that the solid refractories (fire, silica, chrome, or magnesite brick) are of constant thickness in the individual back wall, while the granular hearth refractories (magnesite or dolomite) are of varying thickness. In Table XV the thicknesses shown are as found for the solid refractories, but averaged for the ground material. The thicknesses given are taken as on

*U. S. Patent No. 1,563,038, issued Nov. 24, 1925, to S. Naismith and assigned to Open Hearth Combustion Co.

Table XV

Details of Back Wall Refractories

Furnace	Type of back wall	Silica brick, inches	Fire-brick, inches	Chrome brick, inches	Magnesite brick, inches	Granular material, inches
A	Straight	18	.....	.....	.....	None
C	Semisloping	.....	.....	18	.....	9
D	Sloping	.....	.....	.....	13½	6
E	Semisloping	18	.....	.....	.....	6
F	Straight	18	.....	.....	.....	None
G	Semisloping	13½	.....	.....	.....	4
H	Sloping	.....	13½	.....	.....	6
I	Sloping	13½	.....	.....	.....	4
J	Sloping	.....	13½	.....	.....	4
K	Sloping	13½	.....	.....	.....	4
L	Sloping	.....	.....	.....	18	12
M	Sloping	.....	.....	.....	13½	6
N	Sloping	18	.....	.....	.....	3
O	Sloping	18	.....	.....	.....	3

Table XVI

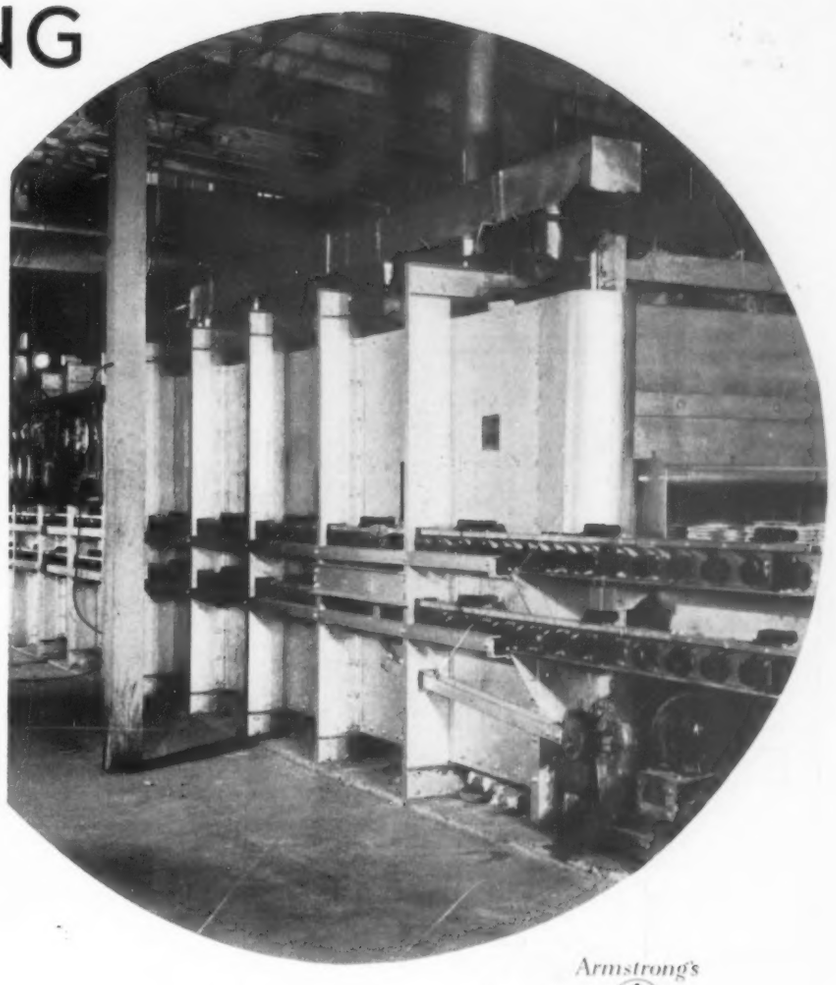
Cost of Back Walls

Furnace	Height, ft.-in.	Refractory Cost, per Square foot	Foot of width	48 feet
A	5-3	$2.18	$11.41	$548
C	6-0	11.08	66.50	2390*
D	5-0	9.92	49.62	2380
E	4-6	4.65	20.78	996
F	5-0	2.18	10.88	525
G	4-7½	3.11	14.38	690
H	4-9	4.10	19.45	934
I	4-6	3.11	13.99	672
J	5-3	3.11	16.33	784
K	6-0	3.11	18.65	896
L	3-3	15.00	48.72	2338
M	5-0	9.92	49.62	2380
N	5-4½	3.41	18.32	879
O	6-3	3.41	21.31	1022

*The normal 150-ton furnace of this type would have a back wall only about 36 feet long, which is the length used in this case only.

ARMSTRONG

insulation specified for new continuous enameling furnace



HERE'S a new continuous furnace, without overhead conveyors or hanging racks. It offers a radical departure in design from the type hereto used for enameling. Yet the Electric Furnace Company, its builder, takes no chance with the insulation. Armstrong and Nonpareil Insulating Brick are specified throughout for this new Electric Furnace Company product.

These insulating brick check fuel waste. More than that—they are machine-sized at the factory, which means easier laying up on the job. Their high salvage value is increased by laying up dry.

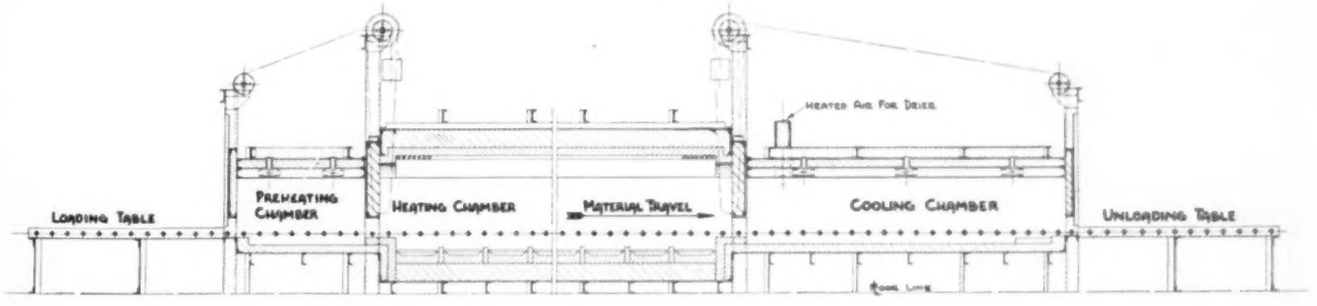
Today Armstrong offers a complete range of high temperature insulation. Armstrong's Insulating Brick, standard for many years, is used up to 2500° F. on the hot face of the insulation. Nonpareil Insulating Brick is recommended for use as high as 1600° F. Armstrong's new EF Insulating Brick stands heat up to 2100° F. It is especially designed for direct exposure and heat reflection, and is suitable for electric furnaces or other types whose walls are not subjected to high abrasion.

Let us send you samples and complete information about all of these brick. See our exhibit at the Tenth National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, December 5th to 10th, 1932. Armstrong Cork & Insulation Company, 920 Concord Street, Lancaster, Pennsylvania.

Armstrong's (A) *Product*

Armstrong's & Nonpareil Insulating Brick

FOR FURNACES, OVENS, KILNS, AND LEHRS



*Among the Advantages**

Outstanding features of this new product by the Electric Furnace Company of Salem, Ohio, are the following:

Greatly reduced tooling cost

All work supported from below, eliminating any dirt from spitting off tools

No roof slot, with corresponding elimination of dirt and dust

Can be built in relatively small units for flexibility in production

Material carried the same as in box type furnaces, eliminates welding on of ears, or punching holes for suspension hangers

Air available from cooling chamber for dryer

Can be heated electrically, or fired with gas, or oil

Minimum floor space required

* *Quoted from descriptive folder by Electric Furnace Company, Salem, Ohio.*

a line perpendicular to the normal axis of the solid material.

Inspection of Table XV indicates that a large number of designers favor silica brick for the back wall. If silica brick is used, there should be a course of neutral chrome brick between the acid silica brick and the basic ground magnesite. The use of firebrick, from both thermal and metallurgical considerations, particularly if hard burned, is probably the most advanced practice. Chrome and magnesite brick should not be used for the full wall on account of their lack of resistance to heat flow and high cost.

Cost of Back-Wall Refractories

The initial cost of the refractories for these various back walls based on the values of Table III, calculated on a square foot basis, as well as for 1 foot of width, and of a height as shown between the foreplate line and the skewback brick are as in Table XVI. The cost for each furnace of a back wall 48 feet long, which is an ordinary length for a 150-ton furnace, is included given for basic comparison. The first cost of back walls as shown in Table XVI, varies from $2.18 to $15 per square foot, or more than 600 per cent. This difference is so wide as to warrant careful examination of the various meth-

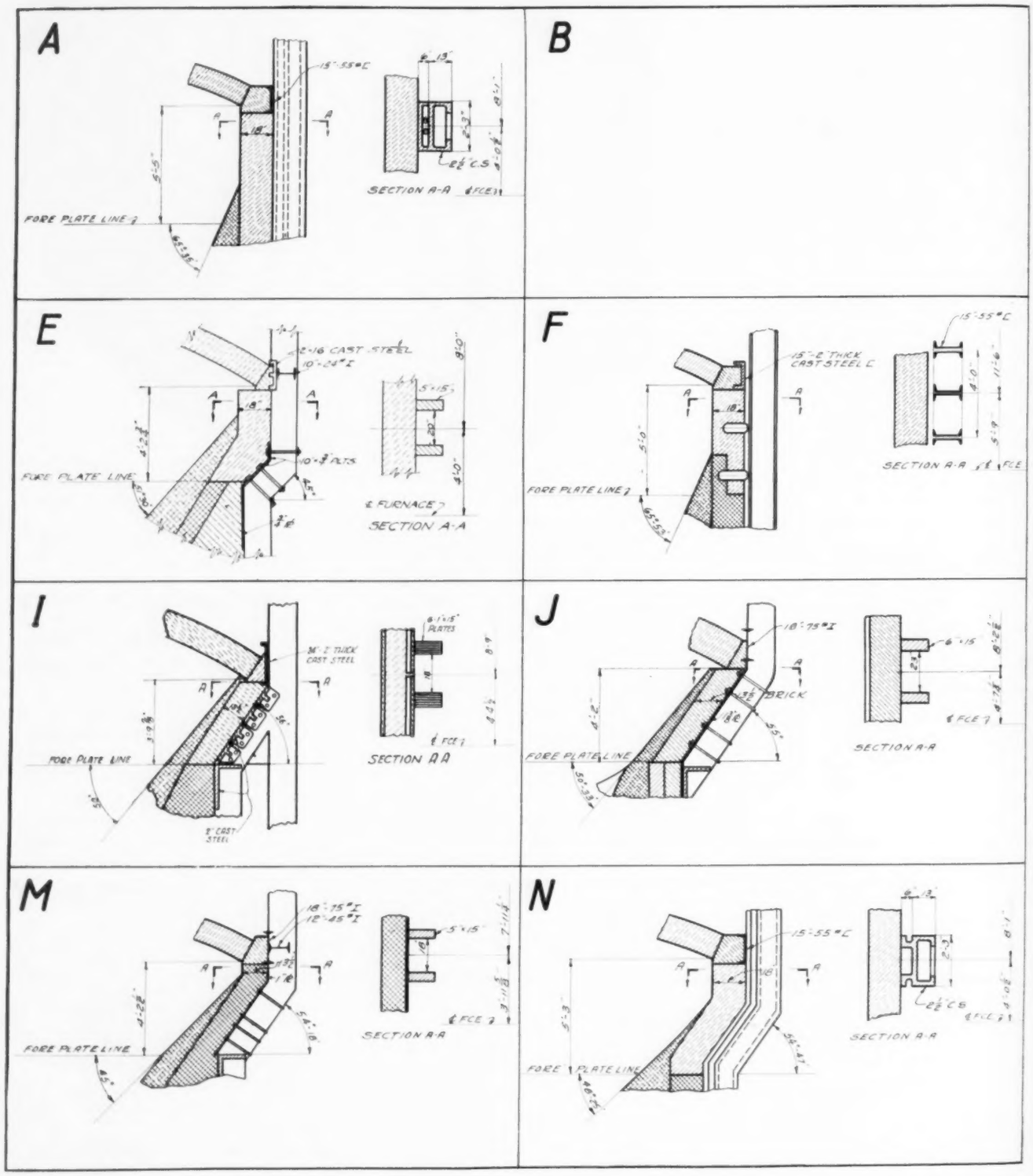


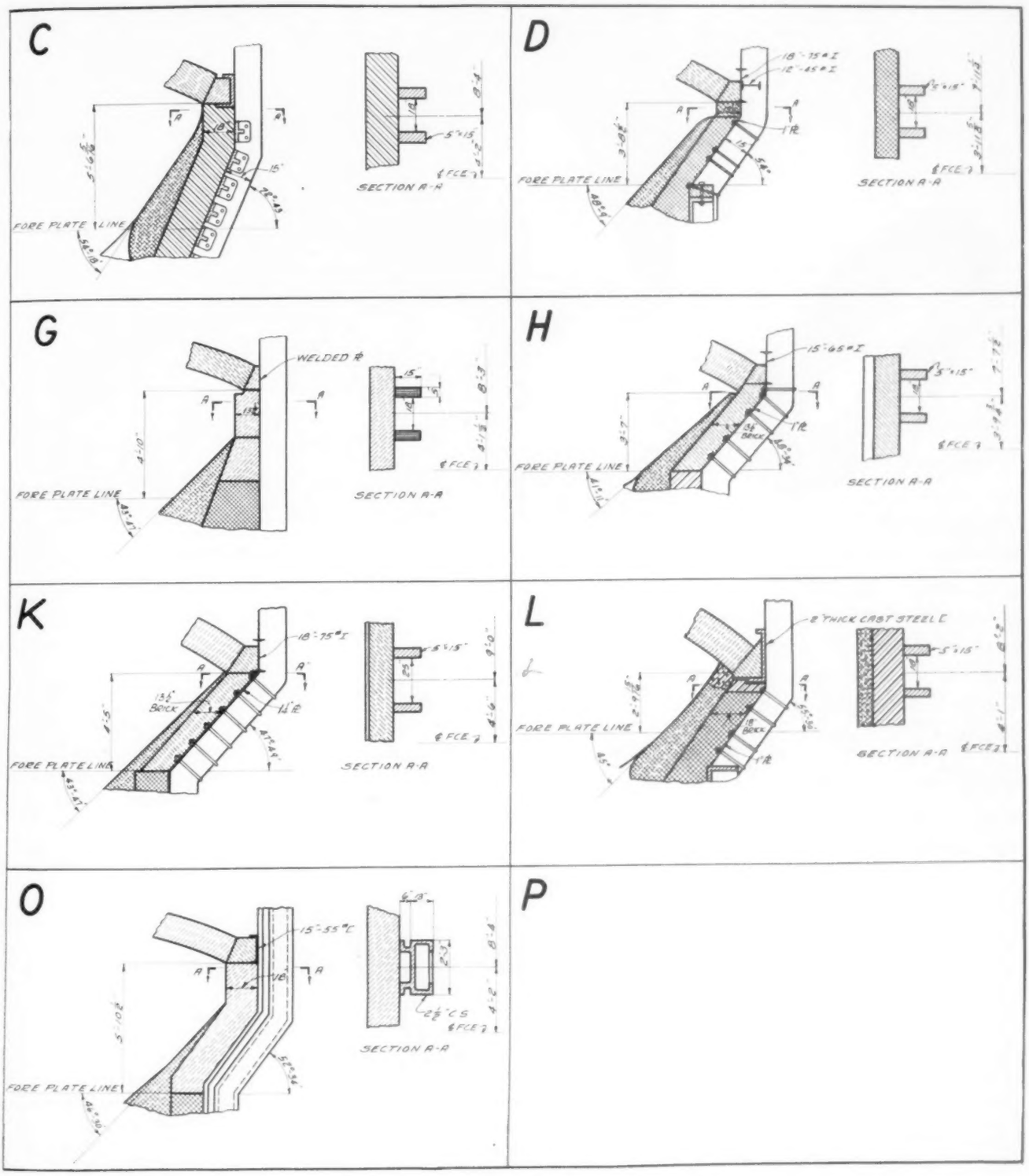
Fig. 17—Principal details of basic open-hearth furnace back walls. All sections are considered as on a

ods of open-hearth design employed.

Furnace F is not included in the discussion of heat flow through the various back wall arrangements because the water-cooling elements add a factor of uncertainty that cannot be reduced easily. The coefficients of heat flow are from Table IV, the required flame temperatures as given are those developed in Table XI, while the inner and outer surface temperatures are developed by the use of Figs. 4 and 6. The emission rates are from Fig. 4, but doubled on the assumption that the atmospheric air movement vertically along the outer back wall will be about 2 feet per second.

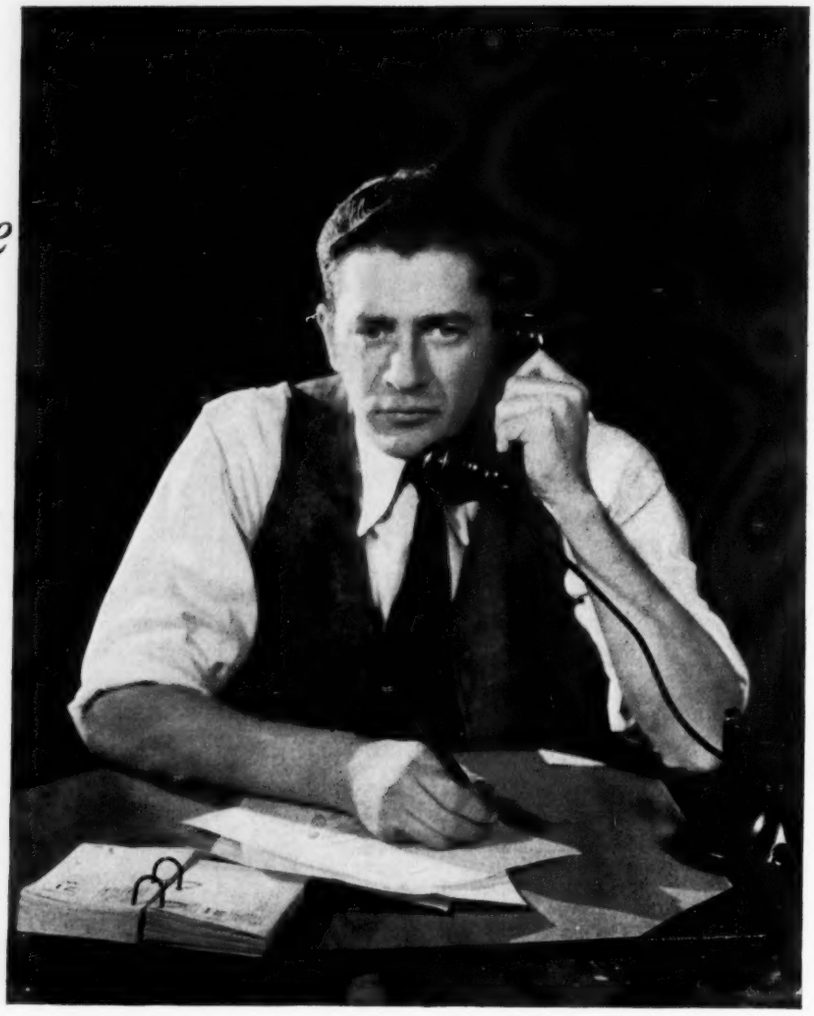
While the temperature of the outer surface varies from 440 to 592 degrees Fahr. the radiated heat varies from 2380 to 4720 B.t.u. per square foot per hour. If the figures of column f, Table V, are compared with those of column h, Table XVII, it will be observed that the heat flow through the back walls averages nearly four times the heat flow through the minimum furnace bottom. Proper back wall design, therefore, would seem to be of considerable importance, and to offer a fertile field for design betterment.

As developed in the discussion on furnace bottoms, the coefficient of heat flow as the combined resistance,



line approximately bisecting the first set of buckstays on either side of the center line of the hearth

. . . *but* IS *it the "same wire?"*



This certainly is a pertinent question. The manufacturer using wire in his product predicates his whole business upon the faithfulness with which the producer of wire performs his functions. A reliable source of wire supply *is* important.

Wissco Wire may be depended upon to be the same uniform high quality every time it is ordered. No harmful short cuts are ever employed to gain economies in its production.

Wickwire Spencer Steel Company has built a reputation by years of study of the finer points of wire making and treating. They have always faithfully followed in methods of manufacture the teachings of this costly research. They are a dependable source of supply . . . Wissco Wire is always the same.

•

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Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes—for your specific purpose. Hard-Drawn, soft, or annealed Basic or Bessemer Wires—Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wires—Valve Spring — Music — Clip — Pin — Hairpin — Hook and Eye — Broom — Stapling — Bookbinding — Machinery Spring Wire — Reed Wire — Clock — Pinion — Needle-Bar — Screw Stock — Armature Binding — Brush — Card — Florist —Mattress—Shaped—Rope—Welding. Flat Wire and Strip Steel, High or Low Carbon—Hard, annealed or tempered—Clock Spring Steel—Corrosion and Heat Resisting Wires. Consult the Wissco technical man on your wire problems, however large or small.

Table XVII

Thermal Properties of Back Walls

Furnace Column	Temperature, °Fahr. Flame a	Inner surface b	Coefficients: Granular material c	Brick d	R e	Outer surface temp., °Fahr. f	Emission rate g	Heat flow B.t.u./sq. ft./hr. h
A	3373	2893	.....	1.375	1.375	508	8.1	3308
C	3372	2797	0.42	0.84	1.26	530	8.5	3655
D	3386	2736	0.28	0.65	0.93	592	9.6	4720
E	3369	2874	0.28	1.375	1.655	490	7.8	3042
G	3423	2883	0.185	1.125	1.21	535	8.6	3740
H	3387	2972	0.28	1.85	2.13	440	7.0	2380
I	3363	2833	0.185	1.125	1.31	518	8.3	3470
J	3217	2807	0.185	1.85	2.035	450	7.2	2520
K	3210	2700	0.185	1.125	1.31	518	8.3	3470
L	3321	2826	0.56	0.84	1.40	525	8.4	3570
M	3366	2736	0.28	0.65	0.93	592	9.6	4720
N	3365	2885	0.14	1.375	1.515	505	8.1	3280
O	3365	2885	0.14	1.375	1.515	505	8.1	3280

R, and its cost, is a direct measure of the effective use of refractories. It was shown in Table V that the *R* of bottoms varied in the range 2.12 to 5.05, and the cost per *R*, $2.39 to $6.10. It was later shown in Table X that a bottom having an *R* of 6.75 at a cost of $1.86 was entirely practicable.

Table XVIII shows the cost per square foot of back wall for the various furnaces, the combined coefficient *R*, and develops the cost per *R*. From this tabulation it may be seen that the back wall coefficients, *R*, range from 0.93 to 2.035, relatively low as compared to those of the bottoms, and the cost per *R* from $1.53 to $10.71, this latter being a range without all reason. Later it will be demonstrated that a back wall construction costing about $5.83 a square foot, but developing an *R* of 3.36, at a cost per *R* of $1.72 and indicating considerable operating economies, is entirely feasable for general use.

On an annual basis, the cost of radiated heat may be obtained from the use of equation No. 4.

$$X = \frac{A \times U \times Y \times M}{1{,}000{,}000} \qquad (4)$$

in which:

X = Total cost of heat radiated through the back wall in dollars per year.

A = The area of the back wall in square feet. In the calculation of the various back walls, the length is taken as 48 feet for all furnaces excepting C which is taken as 36 feet, and the height as noted in Table XVI.

U = The overall rate of emission through 1 square foot of back wall. See Table XVII, column h.

Y = One year, considered as 7200 hours.

M = Cost of fuel, dollars per million B.t.u. as fired, taken as $0.30.

Evaluating the costs of radiated heat for the various back walls will be as shown in Table XIX. The capital costs of the refractory in Table XVI are included for comparison. Table XIX shows that the high cost back walls of furnaces C, D, L and M, which use either chrome or magnesite brick as the principal component, offer no particular economy in fuel costs. The relatively low heat flow of furnace L comes from the unusually low back wall height of this furnace and not from the use of magnesite brick.

(To be continued)

Table XVIII

Refractory Values for Back Walls

Furnace	Cost per square foot (Table XVI)	Combined resistance, *R* (Table XVII)	Cost per *R*
A	$2.18	1.375	$1.58
C	11.08	1.26	8.80
D	9.92	0.93	10.66
E	4.65	1.655	2.81
F	2.18	.....	.....
G	3.11	1.31	2.37
H	4.10	2.13	1.92
I	3.11	1.31	2.37
J	3.11	2.035	1.53
K	3.11	1.31	2.37
L	15.00	1.40	10.71
M	9.92	0.93	10.66
N	3.41	1.515	2.25
O	3.41	1.515	2.25

Recommendations Given for Heat-Exchange Equipment

Recommendations covering a definite outline of procedure for design, construction practice and testing of heat-exchange equipment intended for oil refinery service have been published by the petroleum division of the American Society of Mechanical Engineers, 29 West Thirty-ninth street, New York. Embodied in a 16-page bulletin, the recommendations include purchase data, shop tests, performance tests and an appendix which deals with general subjects such as factors of design, fouling resistance, methods of cleaning and general comments on the preceding parts. The bulletin sells for 50 cents to members of the society, 75 cents to nonmembers.

Approves Standards for Wood Foundry Patterns

A new American recommended practice for foundry patterns of wood has been approved by the American Standards association. This standard was submitted to the association by the American Foundrymen's association, which had an important part in its development, and which has been appointed joint sponsor for the project with the American Society of Mechanical Engineers.

The pamphlet containing the standards, designated B45.1-1932, may be purchased from the American Standards association, 29 West Thirty-ninth street, New York, for 10 cents per copy.

Table XIX

Economic Data on Furnace Back Walls

Furnace	Dimensions, ft.-in. x ft.	Area, square feet	Emission, B.t.u./hr. Per square foot	Total	Annual cost of radiated heat	Refractory cost
A	5-3 x 48	252	3308	833,000	$1800	$548
C	6-0 x 36	216	3655	789,000	1705	2390
D	5-0 x 48	240	4720	1,133,000	2407	2380
E	4-6 x 48	216	3042	657,000	1418	996
G	4-7½ x 48	222	3740	830,000	1793	690
H	4-9 x 48	228	2380	543,000	1174	934
I	4-6 x 48	216	3470	748,000	1615	672
J	5-3 x 48	252	2520	653,000	1372	784
K	6-0 x 48	288	3470	1,000,000	2160	896
L	3-3 x 48	156	3570	557,000	1203	2338
M	5-0 x 48	240	4720	1,133,000	2407	2380
N	5-4½ x 48	258	3280	846,000	1827	879
O	6-3 x 48	300	3280	984,000	2125	1022

Electric Furnace Designed for Low Production Periods

AT REDUCED outputs power demand charges for large electric furnaces become excessive and under these conditions cost of a smaller furnace might be amortized completely in less than a year by the saving in demand charges. A small furnace also is more suitable than a large furnace for making special alloy heats, superheating and refining hot metal, as well as for general utility and experimental purposes.

The accompanying illustration shows a Heroult-type three-phase furnace designed by Samuel Arnold III, consulting engineer, Pittsburgh, to be used primarily as a bleeder type furnace, that is, to be connected to transformers available with larger units. If desired, however, it can be equipped with its own transformer, regulator and switchboard and operated as an individual furnace.

Provides Flexibility

If installed as an individual unit and supplied with the improved type electrical equipment including motor-operated tap changers built onto the transformer, the unit is claimed to be an extremely desirable and efficient tool for small production. Development and application of the motor-operated tap changer to electric furnaces is credited to Mr. Arnold.

The furnace can be lined with either acid or basic refractories, and at periods of low production will ordinarily more than provide for all ferrous metal requirements, but with a power demand charge of one-half to one-fourth of that of a larger unit.

Among other features of the furnace are a heavy steel plate shell welded throughout and reinforced by steel castings, a water-cooled charging door frame and arch and insulation at the masts instead of at the electrode holders which is said to eliminate difficulties formerly encountered with insulation failure.

Cooling Not Required

Special high conductivity copper wedge type electrode holders are used which are extremely rugged and simple in design. With normal operation, it usually is not necessary to water cool the holders, but cooling pipes are provided so that water may or may not be used at discretion. Current is carried to the electrodes over the top of the mast, the bus bars being mounted on nonferrous castings to eliminate eddy current and hysteresis losses and increase the efficiency.

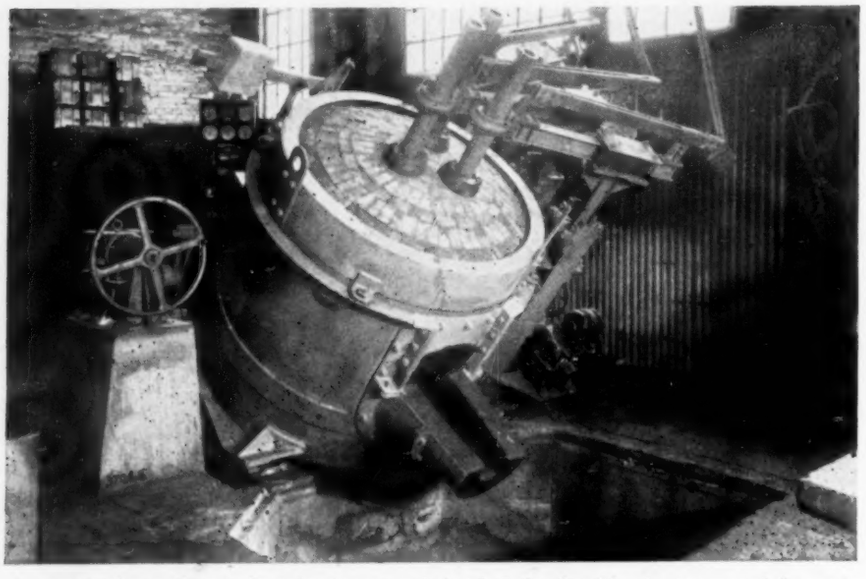
The unit is completely equipped for automatic power control, each of the electrodes being moved by individual electric motors driving through spur gears and a worm gear. The worm shafts are extended for the attachment of handwheels for manual operation when required.

Tilting is accomplished by a worm gear operating a crank. In this case, the handwheel is shown installed upon the worm shaft, which is supported by outboard bearings. The top of the gear casing, however, provides for the mounting of an electric motor, which would be connected to the worm shaft by spur gears, as in the case of the motors for moving the electrodes.

The crank type of tilting gear makes for ultimate safety, for the reason that the forward motion is limited by the crank and continuous operation of the crank will simply oscillate the furnace backward and forward. Very little foundation is necessary and the expense of installation is low.

The worm gear units used for moving the electrodes and for tilting the furnace are manufactured by the De Laval Steam Turbine Co., Trenton, N. J.

Several of these furnaces are in operation and are said to have demonstrated their practicality and efficiency. In one case, it is understood that the total cost of the installation will be wiped out in approximately six months by the savings in demand charges alone.



A small three-phase electric furnace intended to handle ferrous metal needs during periods of low production. Its power demand charge is one-half to one-fourth that of a larger unit

New Finish for Nickel-Clad Steel

AVAILABILITY of nickel-clad steel, a joint development of the International Nickel Co. Inc., New York, and the Lukens Steel Co., Coatesville, Pa., in a new finish and wider range of sizes is announced by the latter company. With the new finish, identified as "hot rolled and cleaned," the duplex steel is free from the brown nickel oxide present on the nickel side in the regular hot-rolled finish.

The cleaning process gives the nickel a matte-like appearance, nearly white in color, with surface claimed to be superior to that produced by standard plate-mill practice. It is pointed out, however, that the new finish should not be confused with the bright, lustrous surface of cold-rolled and full finished solid nickel sheet, where refinement is obtained by cold rolling.

Continue Regular Finish

Nickel-clad steel, it will be recalled, is a bimetal made up of a light layer of pure, solid nickel bonded to a heavy layer of flange quality steel. The nickel layer, which can be of variable thickness as desired up to 20 per cent of the total thickness, provides the corrosion resistance and other advantages of solid nickel construction without prohibitive price in heavy units. Up to the present time the steel has been available only in the regular hot-rolled finish, the nickel surface of which carries a

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On a wide variety of jobs where every weld made must be absolutely dependable, Roebling Wire is used. For experience has proved that the uniform high quality of this wire, including its freedom from non-metallic impurities, greatly aids in securing positive welding results.

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If you must be sure of the quality of the welding wire you use, try some samples of Roebling's custom-made product. Your request will bring either gas or electric types for a trial.

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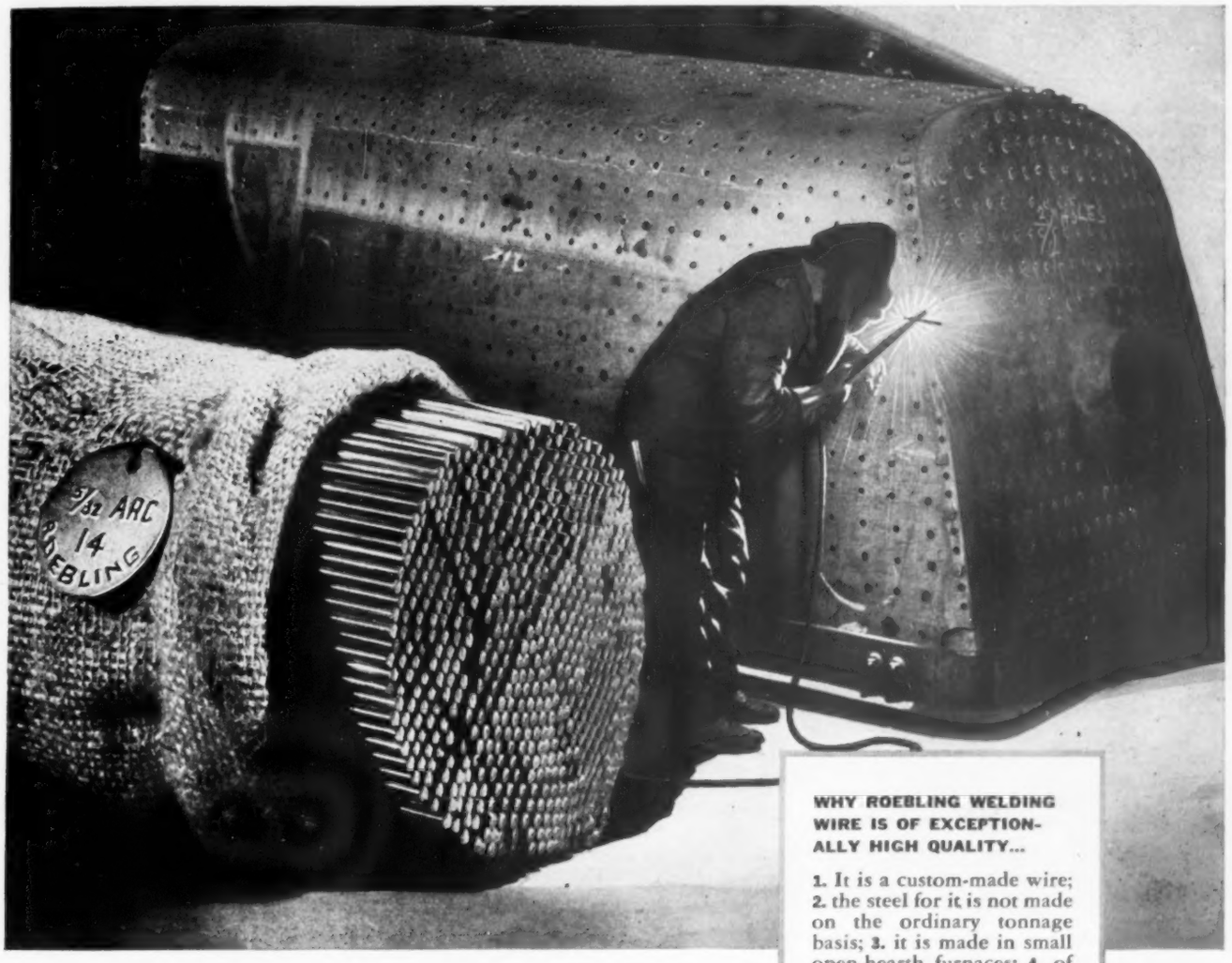

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1. It is a custom-made wire; 2. the steel for it is not made on the ordinary tonnage basis; 3. it is made in small open-hearth furnaces; 4. of special melting stock; 5. and is produced by Roebling's special methods; 6. painstaking care is exercised throughout manufacture.

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tightly adhering nickel oxide film, dark olive brown in color and having excellent corrosion-resisting properties. This finish will continue to be produced along with the new finish.

Size range of 10 and 20 per cent nickel-clad steel plates and circles, one surface clad, has been extended to include 174 plate sizes in 12 thicknesses ranging from 3/16 to 1 inch; 18 widths are available from 24 to 144 inches; lengths range from 140 to 480 inches; circle diameters include 12, from 78 to 120 inches.

A.S.M.E. Slates Meeting Program

SESSIONS on working stresses of metals, rolling of metals, soaking pits and radiant heat, cutting metals, cutting of metals, bearings, lubrication testing, and castings will feature the annual meeting of the American Society of Mechanical Engineers to be held in the Engineering Societies building, New York, Dec. 5-8.

The detailed program covering these sessions has been announced as follows:

Monday, Dec. 5

MORNING

Working Stress Symposium

"Theories of Strength," by A. Nadai.
"Working Stresses for Columns and Thin-Walled Structures," by S. Timoshenko.
"Stress Concentration Phenomena in Fatigue of Metals," by R. E. Peterson.
"Fatigue of Metals—Its Nature and Significance," by H. F. Moore.

Soaking Pits and Radiant Heat

"Use of Blast Furnace Gas in Soaking Pits," by G. T. Hollett.
"Effect of Reradiation Upon the Transmission of Radiant Heat from Furnace Walls and Openings," by J. D. Keller and H. C. Hottel.

AFTERNOON

Working Stress Symposium

"Application of Creep Tests," by G. H. MacCullough.
"Factors Affecting Choice of Working Stresses for High Temperature Service," by P. G. McVetty.
"Metals at High Temperature—Test Procedure and Analysis of Test Data," by Ernest L. Robinson.

Rolling of Metals

"Carburizing with Butane Gas," by C. W. Spicer.
Progress report of Iron and Steel division.

Tuesday, Dec. 6

MORNING

Cutting Metals

Progress report No. 4, Cutting of Metals committee, by O. W. Boston and C. J. Oxford.
"Effect of Lathe Cutting Conditions on the Hardness of Carbon and Alloy Steels," by T. G. Digges.

AFTERNOON

Cutting of Metals

"What Can Be Accomplished with Modern Machine Tools and Cemented-Carbide Cutting Tools," by A. A. Merry.
"Grinding Cemented-Tungsten and Tantalum Carbide Tipped Tools Efficiently and Economically," by J. M. Highducheck.

Bearings

"The Morgoil Roll-Neck Bearing," by F. P. Dahlstrom.
"Strength of Roll Necks," by W. Trinks and J. H. Hitchcock.

Wednesday, Dec. 7

MORNING

Foundry

"Special Steel for Castings," by R. A. Bull.
"Malleable Iron as a Component Part of Machines and Structures," by E. Touceda.
Progress report of Machine Shop Practice division.

Thursday, Dec. 8

AFTERNOON

Lubrication Testing

"Some Problems on the Lubrication of Vertical Journal Bearings," by A. I. Ponomareff and E. D. Howe.
"Chemistry of Lubrication," by W. F. Parish and Leon Cammen.

Promotes Contest on New Applications for Steel

A campaign which has for its purpose the finding of new markets, new outlets, and new applications for steel is being undertaken by the Association of Iron and Steel Electrical Engineers, Pittsburgh, the effort being sponsored by the mechanical, combustion, lubrication, electrical and safety engineering divisions of the association.

Every member is eligible to offer suggestions for which a series of cash prizes is to be awarded on the basis of practicability, utility and economical use of the product suggested. Any number of suggestions can be submitted. Judges will be selected from leading steel companies or the American Iron and Steel institute.

The contest will begin Nov. 15 and will continue through May 15, 1933, with the prizes to be awarded at the twenty-ninth convention of the association in June.

Describes Speed Control For Large Motors

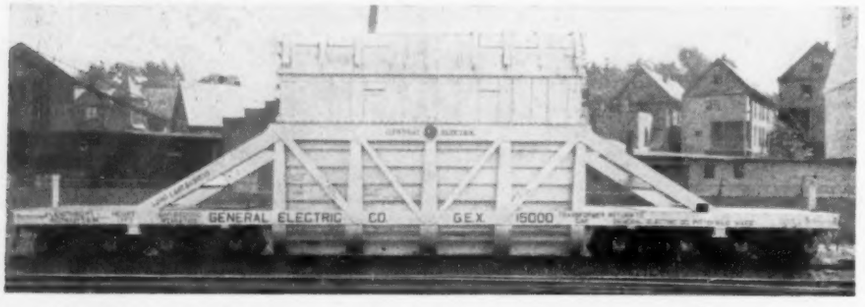
The Rossman system of speed control for large alternating-current motors was described by A. M. Rossman, Sargent & Lundy, engineers, Chicago, before a meeting of the Chicago district section of the Association of Iron and Steel Electrical Engineers, in Chicago, Nov. 15. In this system a wide, continuous range of speeds is obtained by rotating the frame of an otherwise standard, constant-speed type synchronous or induction motor.

The rotatable frame is mechanically connected to an adjustable speed direct-current machine by means of which it can be rotated in one direction to add speed to, or in the opposite direction to subtract speed from, the inherent constant speed of the alternating-current motor. Twenty-three units of this type in ratings ranging up to 750 horsepower now are in successful operation driving fans and pumps in steam power stations. Fourteen additional units in rating up to 2500 horsepower are on order, some of which now are under construction.

In a constant horsepower arrangement, the system is said to be suitable for driving the rolls of a continuous steel mill.

Issues Bulletin on Nickel-Clad Steel Fabrication

Methods for the fabrication of nickel-clad steel plate are discussed in a new bulletin T-4 prepared by the International Nickel Co., 67 Wall street, New York. This bulletin, profusely illustrated with sketches and illustrations and equipment made from the product, was written by F. P. Huston of the company's development and research department.



TRANSFORMER CARRIER OF WELDED CONSTRUCTION: Over 5000 feet of welding was required in the assembly of this large steel car for shipment of transformers. Built by the General Electric Co., Schenectady, N. Y., the car is 60 feet long and 10½ feet wide, weighing 141,000 pounds. It is provided with two lifts, one of 2 feet and the other 3½ feet. Tank is constructed of 3/16-inch steel, welded to stand a gas pressure of 5 pounds per square foot. When in service the tank will be filled with gas to prevent accumulation of moisture in the transformers. In tests the car was loaded with 141 tons of pig iron, approximately 11 tons in excess of capacity. With this load of 52,750 pounds on each of the eight axles, the car was hauled over curves and grades to determine strength of springs and structural members

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NATIONAL SEAMLESS

Making the Most of

METHODS AND MATERIALS

SMALL particles of metal frequently adhere to raceways of ball bearings after grinding and lapping of the rings. Because of the close tolerances to which the balls and rings are made the assembled bearings permit little radial and lateral play, and minute pieces of foreign matter can cause excessive wear if allowed to remain. One ball bearing manufacturer has found that the cleaning of its product is facilitated by first demagnetizing the bearings. This operation releases small particles held by magnetic force and permits them to be washed out more easily during the cleansing process.

$ $ $

Shortly after the bearings of an oil engine had become so worn that they were almost useless, an accident occured which broke both bronze main bearings. After removing the four broken parts, the broken edges were beveled and welded together with bronze rod. Then the wearing surfaces were built-up with bronze and machined to size. A considerable saving over replacement cost was realized by this work.

$ $ $

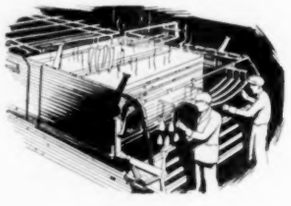
PORTABILITY has become an item of interest in connection with speaking horns which are placed behind theater screens, at the same time ruggedness and strength are no less important. By designing a new speaker for complete fabrication by welding, a saving in weight of 350 pounds over older models not completely fabricated by welding has been accomplished. Former speakers were made of 16-gage iron with the more eccentric seams welded and all corners had a heavy angle or channel iron mechanical construction giving the unit a total weight of about 500 pounds. The new horn is made up of 22-gage iron, completely cut to shape with the cutting blowpipe and all joints are oxyacetylene welded. Jigs were designed to facilitate lining up the parts and to hold them during welding. The new speaker weighs only 150 pounds, is fully as strong as the previous model, is light enough to be moved easily and is considerably more economical to fabricate.

$ $ $

Some 6000 tests have shown 18 per cent chromium 8 per cent nickel austenitic stainless steel to be exceptionally suitable material for dyeing equipment. As a result of ease in cleaning, a single stainless steel vat has replaced ten or more wooden vats. Among the many machine parts and equipment which come in contact with either the dye or the material to be dyed and which can be made from stainless steel are dye tanks, dye tank linings, pipe lines and fittings, heating coils, dye sticks, yarn tubes and racks, perforated bobbins, reels, rolls, pans, spray pipes, buckets and dippers.

$ $ $

A large eastern equipment builder is chromium plating wear resisting parts on an increasing scale. It is not only plating a larger number of new parts for new machinery but is plating old crankshafts and other parts in



order to put on new wearing surfaces. For instance, it puts a chromium plate 0.004-inch thick on a worn crankshaft and grinds it down to 0.002-inch to get a new wearing surface. The plate has a brinell hardness of about 1000 and parts thus repaired wear longer than a new part unplated.

$ $ $

An English company has patented a series of light aluminum alloys containing from 1.30 to 2.25 per cent copper; 1.30 per cent nickel; 0.10 to 1.60 per cent mangnesium; 1.00 to 1.40 per cent iron; 1.25 to 2.20 per cent silicon; 0.10 to 0.18 per cent titanium; and remainder aluminum, for sand and die castings.

$ $ $

Recent tests completed by an automobile manufacturing company under simulated service conditions showed that a gray iron camshaft gave 180 hours of continuous service under changed directional stress as compared with 78 hours for a forged camshaft previously used. A factor in favor of gray iron camshafts is the low production cost, since dies used in forging these parts are high in cost and comparatively short lived.

$ $ $

TESTS were run recently on road grader blades used in the Northwest. After the original bevel of such blades has worn sufficiently to dull the edge, the blade is drawn out sharp again. When plain steel was used, this drawing operation was required every two to six days. Hard surfacing of stellite then was applied to a pair of these blades and a test was run to determine the increase in life that this application afforded. It was found that one pair of blades lasted five weeks before needing resharpening. A second set was hard faced, and at the end of two weeks it was in first-class condition with plenty of wear-resisting material left on it. The cost of this work was slightly less than twice that of drawing out a pair of blades, while the service life was increased between 6 and 17 times that of plain steel.

$ $ $

The most successful applications of chromium-plated tools have been in the cutting of nonmetallic materials, nonferrous metals and cast iron. Although some work has been done with steel, little factual material is at hand. The investigator in this field is handicapped seriously because the users of these tools have no historical data to offer. It seems likely, however, that applications in the field of nonferrous metals and steel may be extended with the help of present knowledge of plating control and the proper treatment of the base metal.

PROGRESS IN STEELMAKING

EQUIPMENT now is available that will granulate slag, extract the water and load the slag as it comes from the cinder runner. The water content of blast furnace granulated slag usually is not removed until the material is received at the cement plant, thus increasing the cost of transportation and necessitating thawing out during the winter months. The new equipment thus affords an interesting means for reducing costs in the utilization of blast furnace by-products.

COARSE adjustment of motor speeds on a 4-stand cold strip mill in the Chicago district is secured by a motor-operated rheostat in the main motor field circuits and fine adjustments by hand-operated rheostats. Once the rheostats are set for the desired speed values to conform to the specification being rolled, no further attention is required.

♦ ♦ ♦

Extending the life of ordinary steel top knives of a flying shear from six heats of 4-inch alloy steel billets to a campaign of 50 heats, has been effected at one plant by the application of a thin coat of wear-resisting alloy.

♦ ♦ ♦

Melting points and viscosity of metals and alloys are being determined at a plant in the Pittsburgh district by an ingenious micropyrometer now under development. A minute piece of metal to be tested is placed on a platinum strip, suspended from two terminals, and low-voltage current applied. The heating chamber is gas-tight and observation is made by a microscope through a quartz window. When fusion begins, the current is shut off. Temperature automatically is recorded by a radiation pyrometer.

♦ ♦ ♦

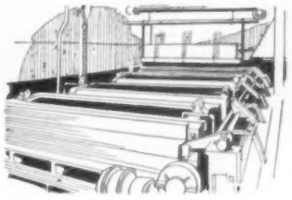
Marked improvement in zinc plating of steel has been made possible by the recent development of a new mercury-aluminum-zinc anode. Claim is made that through the use of this anode, the deposit is improved, the sludge is held to negligible proportions and the anode does not polarize excessively.

♦ ♦ ♦

Cast alloy guide shoes have been developed for seamless tube mills which are claimed to afford a campaign of eight 10-hour turns before replacements are necessary.

♦ ♦ ♦

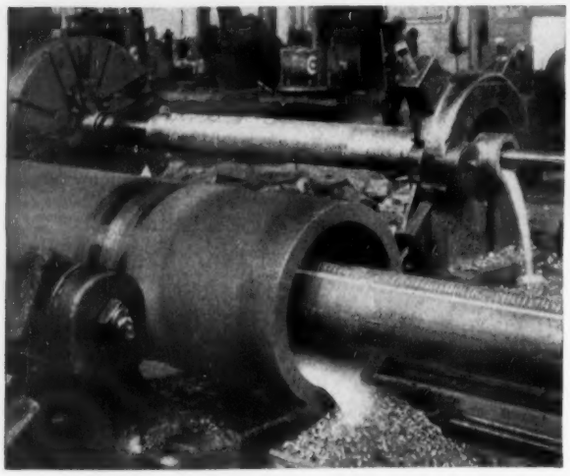
Twenty per cent more economical than sal ammoniac is the claim made for a newly developed galvanizing flux. The frothing agent is self-contained, thus obviating the need of adding saw dust, bran, oatmeal, tallow or glycerine to produce the froth which serves as an effective blanket and wetting agent for the steel entering the kettle. Use of the new flux reduces fuming and the loss of zinc by spitting.



RUBBER-LINED steel pickling tanks are gaining favor in the steel industry. The lining is a composite rubber sheet vulcanized to the steel by a special process developed by an Akron rubber company. The coating, composed of two soft layers with a hard layer between, is 3/16-inch thick. After the plied strips of uncured rubber are cemented to the interior of the tank, the container is placed in a cylindrical heater which cures and vulcanizes the lining and causes it to adhere to the steel with a strength of 500 pounds per square inch. While the cost of rubber-lined tanks provided with brick sheathing is higher than some other types of vat construction, it is claimed the increased life compensates for its higher cost.

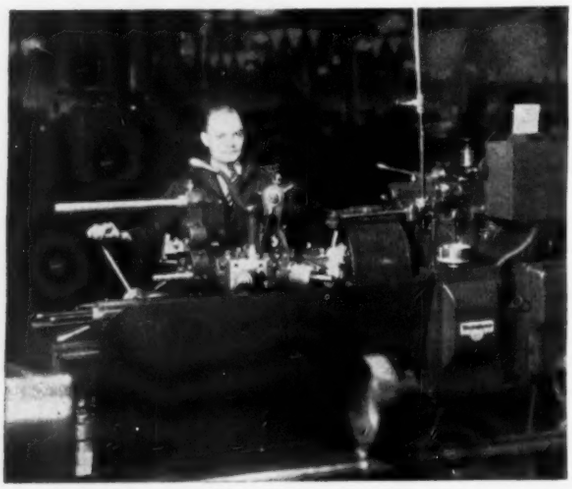
INCREASED holding power of steel nails may be obtained by a treatment recently developed by the department of agriculture. The nails and staples, or wire from which they are to be made, are subjected to the action of a 2 per cent solution of ferric chloride in water in the presence of of mercuric chloride or salts of other metals, particularly of those falling below iron in the electrochemical series. This treatment affords the desired pitted condition of the nails. Upon removal from the solution, the materials are allowed to dry in a warm atmosphere, after which they are exposed at a temperature of approximately 212 degrees Fahr. and a relative humidity of about 80 per cent. The nails, staples or wire are immersed in water to fix the adhering iron oxide. The average holding power of 7-penny nails driven 1¼ inches and pulled immediately from dry pine wood is in the ratio of 100 per cent for plain nails, 187 per cent for cement nails and 288 per cent for nails subjected to the new chemical etching process.

NEW STANDARDS *for*



Courtesy of Camden Forge Company, Camden, N. J.

OPERATION: DRILLING HYDRAULIC CYLINDER FOR STEERING GEAR.
MACHINE: BRIDGEFORD BORING LATHE. 80 FT. TABLE.
MATERIAL: .35—.45 CARBON STEEL.
DIAMETER OF DRILL: 14 INCHES.
DEPTH OF DRILL: 20 FEET.
TIME: 100 HOURS.
LUBRICANT: 1 PART SUNOCO TO 16 PARTS WATER AT 125 LBS. PRESSURE.



Courtesy of Warner & Swasey Company, Cleveland, Ohio

OPERATION: TURNING, BORING, FACING AND FORMING FRICTION WORM GEAR.
MACHINE: NO. 4 WARNER & SWASEY TURRET LATHE.
MATERIAL: ALUMINUM BRONZE.
TOOLS: TUNGSTEN CARBIDE.
SPEED: 500 FEET PER MINUTE.
FEED: .010 INCH.
STOCK REMOVAL: 1/8 IN. ON ALL SURFACES.
TIME PER PIECE: 2½ MINUTES.
LUBRICANT: 1 PART SUNOCO TO 20 PARTS WATER.

Machine Tools built to maintain a production schedule can only operate to capacity when they are aided by an efficient cutting lubricant. In today's rigid program of economy there is no place for cutting lubricants that delay production.

For its ability in aiding Machine Tools to keep production speed up and production cost down, Sunoco is gaining new recognition throughout the metal working industry. This recognition is based, not upon theory, or price, but upon actual performance.

With Sunoco the high speed modern lathe maintains its schedule, an unusual amount of work is produced between tool grinds, and the cuts are clean and accurate.

In the milling operations, more pieces per grinding of the cutter, less "lost" time in changing cutters, fewer chatter marks, and more satisfactory work are the results obtained when using Sunoco.

Sunoco aids metal sawing machines in cutting through bar stock, tool steels and

SUN OIL COMPANY,
SUN OIL COMPANY, LTD., Montreal, Canada.

SUN
EMULSIFYING

Made by the producers of

Akron, Albany, Allentown, Atlantic City, Baltimore, Battle Creek, Beaumont, ton, Detroit, Flint, Grand Rapids, Harrisburg, Jackson, (Mich.), Jacksonville, Reading, Rochester, Scranton - Wilkes Barre, Syracuse, Tampa, Toledo,

Metal Cutting Performance

stainless steels, cutting off clean and straight. It insures accurate cuts with long blade life.

The heat absorbing properties of Sunoco permit Tungsten Carbide, Tantalum Carbide and other non-ferrous small tools to take heavy cuts at super speeds.

The use of a properly balanced grinding fluid is necessary if your abrasive wheels are to remove metal quickly, smoothly and accurately. Sunoco has introduced new efficiency in the grinding operation. It has actually made possible faster stock removal without increasing wheel wear. Production accuracy is assured with more pieces per abrasive unit.

A trial in your own plant, under your own operating conditions, will convince you that Sunoco is the one outstanding economical cutting lubricant. Our cutting oil engineers—of wide contact and experience—are at your service for surveys, consultation and recommendations.

PHILADELPHIA, U.S.A.

BRITISH SUN OIL CO., LTD., London, England

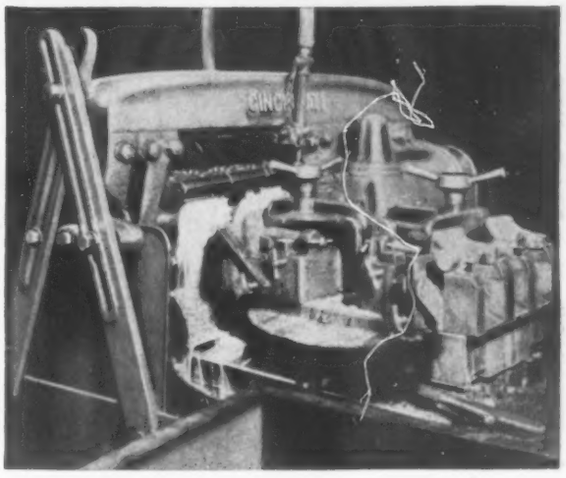
OCO

CUTTING OIL

BLUE SUNOCO MOTOR FUEL

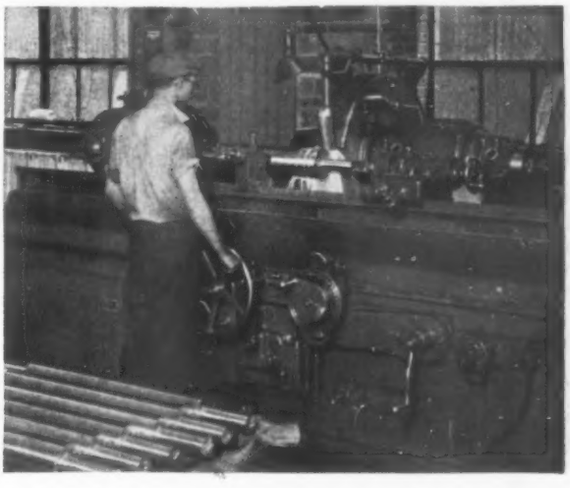
Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Columbus, Dallas, Day-Miami, Montreal, Newark, New York, Philadelphia, Pittsburgh, Providence, Toronto, Trenton, Tulsa, Wilmington, Youngstown, and London, England.

Courtesy of Cincinnati Milling Machine Company, Cincinnati, Ohio



PART NAME: STEERING KNUCKLE.
OPERATION: MILL FACE OF THREE BOSSES AND FLUSH AT BOTTOM.
MACHINE: 4-36 PLAIN CINCINNATI HYDRO-MATIC.
MATERIAL: STEEL FORGING.
STOCK REMOVED: 1/8 INCH TO 1/4 INCH.
CUTTER: 6-11 IN. DIAM. INSERTED BLADE SIDE MILLS.
SPEED: 15 R. P. M.
PRODUCTION PER HOUR: 141.
LUBRICANT: 1 PART SUNOCO TO 20 PARTS WATER.

Courtesy of Cincinnati Grinders Inc., Cincinnati, Ohio



OPERATION: GRIND TWO BEARINGS AND SHOULDER.
MACHINE: CINCINNATI 18 IN. BY 120 IN. PLAIN SELF-CONTAINED GRINDER.
MATERIAL: S. A. E. 3115.
STOCK REMOVED: .0005 INCH.
WHEEL: 30 IN. X 4 IN. X 12 IN.—50 P.
LUBRICANT: 1 PART SUNOCO TO 40 PARTS WATER.

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

Rolling Grilles Recommended For Many Applications

Cornell Iron Works Inc., 3610-20 Thirteenth street, Long Island City, N. Y., recently introduced a rolling grille recommended for entrances, gateways, windows exterior or interior openings, etc. to provide safety against trespassing, at the same time admitting light, air and vision. The rolling grille, shown herewith, is counterbalanced at all points by tempered springs to afford easy and even operation. Larger sizes are operated by simple mechanical means.

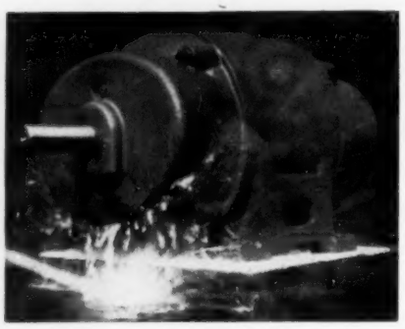
The grilles consist of rolled and pressed steel bars joined together with strong ornamental links with straight links in side guides. When coiled on a horizontal shaft they are between 10 and 16 inches in diameter. Usual installations are made on the face of a wall as shown in the illustration. They can be made to coil under the lintel and if furred in become entirely hidden when open. Grilles are made with bronze, rustless steel or aluminum rods and links.

◆

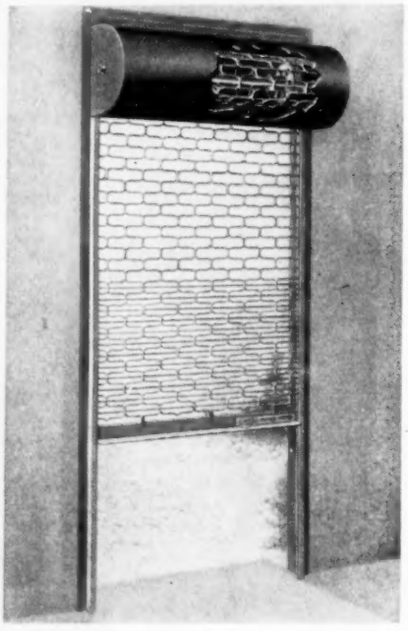
Hand Lift Truck Has New Type Release

Lewis-Shepard Co., Boston, recently has introduced a new hand lift truck having capacities up to 5000 pounds. The truck is made in two widths, 17½ inches and 24 inches and with lifts of 1⅝ inches or 2¼ inches. It is pointed out that the truck lowers the loads forward and downward at the same time and that the descending load cannot grind down along the next load behind. A slight backward roll of the truck as the load descends prevents loss of floor space. The truck is shown herewith.

When in the load-raising position, the handle always is connected to the load. Therefore, the operator cannot pull on an empty handle with a resulting accident. To release the load from its elevated position, the operator presses lightly on the release pedal. A new type of horizontal release with a large reservoir has been developed for use on the truck.



New Louis Allis splash-proof motor is ventilated adequately



◆

Motor Is Protected Against Splashing Liquid

Louis Allis Co., Milwaukee, has developed a splash-proof motor to prevent entrance of water splashed under pressure from any angle, yet adequately ventilated and built in the same dimensions as standard open motors. A double baffle in an elliptically shaped air passage in each end-bell provides the protection offered by this motor, shown herewith.

Another feature is a shaft guard which breaks the force of a stream directed along the shaft extension and prevents water from entering the bearing chamber. The new motor eliminates the necessity for sheet metal covers which might restrict ventilation.

◆

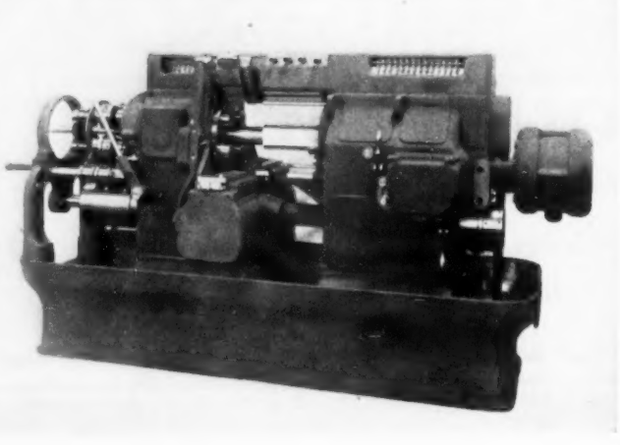
Four-Spindle Automatic Has Many New Features

National Acme Co., 170 East 131 street, Cleveland, recently announced a new ⅞-inch model R Gridley four-spindle automatic, shown herewith. Among the features of the new unit is the tooling accessibility. Top slides are set at an angle instead of horizontal to provide easy access to tools. The tool slide drum is placed under

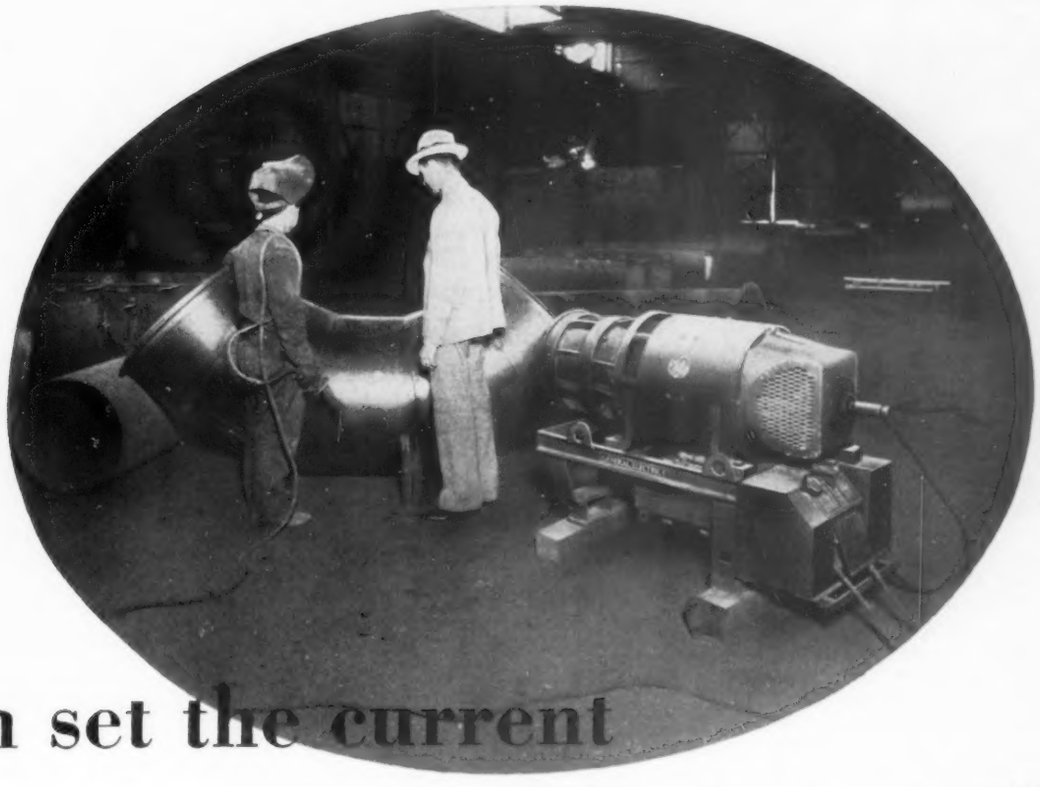
Above — Installation of Cornell rolling grille

Left—Lewis-Shepard truck has capacity of 5000 pounds

Right—Gridley four-spindle automatic developed by National Acme Co.



"How do I like the G-E Welder?



I can set the current and it stays put."

"I CAN get as high or as low a current as I want, and the current flow is equally steady at any setting. Once adjusted, the current stays put."

That's what this operator, who is kept busy fabricating air pipe from structural plates at the Wyatt Metal and Boiler Works, Dallas, Texas, told the G-E welding specialist.

If you are skeptical of the claims made about the G-E welders, go to your welding distributor or nearest G-E office and see the new set in action. Test it yourself; compare it with any other welder on the market. See also the complete line of G-E welding electrodes and accessories. General Electric Company, Schenectady, N. Y.

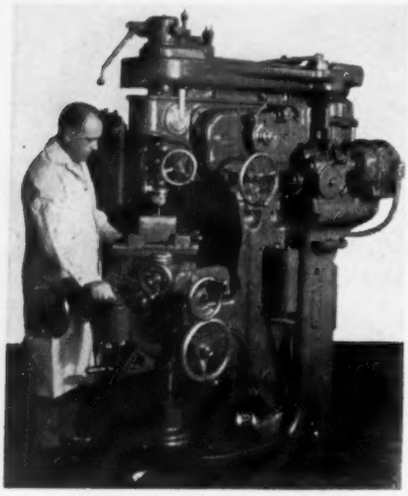
THE G-E ARC WELDER

Combines and excels all the best features of all the good welders now on the market . . . plus new features all its own.

1. Quick recovery ("pep")
2. Self-excitation
3. Stable, flexible arc
4. Light, compact, strong construction
5. Duplex voltage control

530-135

GENERAL ELECTRIC



Newly developed Pratt & Whitney universal die sinking machine

the gear box section, leaving the central space under the slide clear for chips. A safety clutch is built into the worm gear which drives the feed and index mechanism, so that if an accident occurs no harm will be done.

Frame and pan of the new model are of box form, with a heavy top section to tie the gear section to the spindle frame, making the entire machine a rigid unit. Forced feed automatic lubrication independently controlled to each bearing is an outstanding characteristic. The system which accommodates all parts of the machine, employs a lubricating pump located in the top section directly over the gear box to force oil to a series of visible oilers. From there a separate copper tube is connected to each bearing. When the unit is stopped the pump discontinues supplying oil to the visible oilers.

◆

Announces New Universal Die Sinking Unit

Pratt & Whitney Co., Hartford, Conn., has placed on the market a new universal die sinking machine known as No. 2A. The unit, shown herewith, applies a new idea to die making, that of making cherrying cuts without special attachments or special cutters, and using power to feed the cutter. This has the double effect of speeding up a difficult hand operation into a quick machine operation, and eliminating costly cherrying cutters which the new machine has made unnecessary. Standard die sinking tools only are used for either straight or cherrying cuts.

One of the principal new features of the machine is the oscillating head equipped with power feed using a separate motor. By means of this head an ordinary die sinking cutter is moved through a semicircular path producing a cylindrical cavity. This method is much faster and a great deal more accurate than the old way. In addition it produces the correct draft on the die, and eliminates cutting the draft by hand afterward.

◆

Paint Spray Gun Embodies New Principles

Alexander Milburn Co., 1416-28 West Baltimore street, Baltimore, has placed on the market a new paint spray gun manufactured in two types, one for large work and the other for fine touch-up and high lighting. The body of the unit, shown herewith, is aluminum alloy, with the handle a part of the forged body. Fluid nozzle and air atomizer head are constructed on

Paint spray gun developed by Alexander Milburn Co.

new principles. The air atomizer head has a seat in its base, into which the hardened steel nozzle seats both vertically and horizontally, giving rigidity and close alignment to the parts, an essential feature in a spray gun.

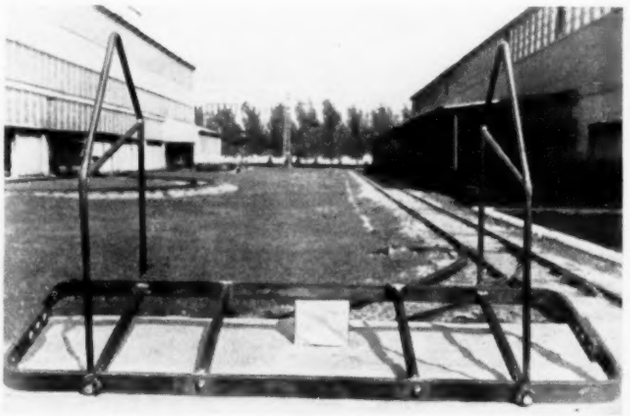
The atomizer head is formed in one piece and drilled so that the planes through which the air passages traverse are true parallel surfaces with the air orfices at right angles. The fluid, such as paint or lacquer, is controlled as to volume or density by means of an independent removable unit needle valve, adjacent to the operator's hand. Through the air valve control and the paint valve control, any width or shape spray or volume of material can be obtained. A special latch releases the paint control so that the spray can be cut off for safety while the operator is climbing ladders or scaffolds. It also allows the full air supply to be used for dusting.

◆

Develops New Type Rod for Welding Monel Metal

International Nickel Co., 67 Wall street, New York, has developed and placed on the market a new type welding rod for welding monel metal. With the use of this rod monel metal welds are produced which are galvanically neutral to the parent metal in the presence of pickling acids. As a result of the development of these rods it now is possible to design pickling racks of forged or rolled monel metal with welded joints. Hitherto welded joints have not been customary in pickling racks due to the rapid deterioration of welds under former welding methods. With the new rods it is possible to make racks of equal carrying capacity but lighter in weight. It also is possible to make racks of entirely welded construction or composite racks of welded and riveted construction such as shown in the accompanying illustration. The new rods are made of monel metal, varying slightly in analysis from commercial monel metal.

NEW type of welding rod developed by International Nickel Co. was employed in fabricating this monel metal pickling crate. With this rod monel metal welds are produced which are galvanically neutral to parent metal in the presence of pickling acids



Production Is Sensitive to Declining Demand

Rate Drops to 19 Per Cent as Auto Manufacturers Are Only Substantial Takers—Tin Plate Price Off 50c—Scrap Is Easier—N. Y. C. Releases 6000 Tons Rails

A GENERALLY weaker situation in iron and steel, evident since Nov. 1 in demand, has now spread to production, and steelmaking operations are off two points to 19 per cent, making the first sizable break in the advance which began early in September.

Until a few days ago, automotive requirements, which have been the most comprehensive since spring, have supplied an offset to the decline in specifications from practically all other classes of consumers, but now the load has become too great.

It is not unseasonal for general demand to contract in November and December, but producers mildly hoped this year that government financing of building projects and railroad equipment repairs would tie in with year-end automotive needs to maintain production at 20 to 25 per cent.

This expectation, it now appears, will not be realized unless pending work matures unexpectedly rapidly. While automotive steel shipments will continue brisk until mid-December, they are probably at their peak now, and railroad and building tonnage prospects are not promising.

In prices, also, more irregularities are apparent. Tin plate, after holding at $4.75 per base box since October, 1931, has declined 50 cents. A reduction of $4 per ton in angle bars completes the cycle which was inaugurated by the $3 drop in the price of rails and followed by an adjustment of $4 in spikes and $2 in tie plates.

Further concessions have developed in concrete bars and coke, while scrap has worked down another 25 cents in many markets. Plates are easier in the East. The net result of these changes is to depress the iron and steel composite of STEEL 40 cents to $28.92, the finished steel composite $1 to $46.70, and the scrap index 8 cents to $6.83.

A radical departure in pricing steel plates and shapes for fabrication is a policy of quoting these products delivered to the job. One effect will be to localize competition for fabricated structural and plate work. An announcement of quantity extras on steel bars, plates and shapes in order to draw the line between mill and warehouse business more distinctly seems near.

Structural steel awards took a spurt last week when the Dominion Bridge Co. booked 10,000 tons for a bridge at Quebec, putting the week's orders up to 20,393 tons. Fort Pitt Bridge Co. is low on 11,500 tons of steel for the Cleveland postoffice.

For immediate rolling, the New York Central railroad has released 6000 tons of rails. This road also has distributed substantial lots of rivets, bolts and nuts for its car repair program. Bethlehem Steel Co. has booked 3000 tons of rails for the Delaware & Hudson. For two weeks, specifications for track fastenings to Chicago mills have been encouragingly large.

Barring automotive specifications for sheets, strip and bars, principally to mills in the Cleveland, Buffalo and Youngstown districts, there is little call for other products. November is the lowest month this year in tubular products. With the tin plate price reduced to the lowest level since 1916, some year-end releases are probable.

Excepting Chicago, where bookings are moderate, pig iron shares with steel the shrinking tendency in buying. A sale of heavy melting steel scrap at $8.75 at Pittsburgh is another weakening indicator in this market. As yet, however, there is no distress selling.

Cleveland, whose mills gained 3 points in the week ended Nov. 19, has an operating rate of 38 per cent, highest for the country. Buffalo production also was 3 points stronger, at 25 per cent. Eastern Pennsylvania mills were stationary at 13½ per cent. Other districts declined, Youngstown 1 point to 16 per cent, Chicago 1 point to 17, Pittsburgh 2 points to 18, while Birmingham halved its former 25 per cent rate.

Composite Market Averages

	Nov. 19	Nov. 12	One Month Ago Oct., 1932	Three Months Ago Aug., 1932	One Year Ago Nov., 1931	Ten Years Ago Nov., 1922
Iron and Steel Composite	$28.92	$29.32	$29.32	$29.32	$30.61	$42.08
Finished Steel Composite	46.70	47.70	47.64	47.46	48.17	59.01
Steelworks Scrap Composite	6.83	6.91	6.96	6.06	8.22	17.53

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plate, shapes, bars, hot strip, nails, tin plate, pipe. Steel Works Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Nov. 19, 1932	Oct., 1932	Aug. 1932	Nov. 1931
Pig Iron				
Bessemer, del., Pittsburgh	$15.76	15.76	15.76	17.76
Basic, valley	14.00	14.00	14.00	15.00
Basic, eastern, del. eastern Pa.	13.50	13.60	13.85	16.00
No. 2 foundry, del. Pittsburgh	15.76	15.76	15.76	17.76
No. 2 foundry, Chicago	15.50	15.50	15.50	17.00
*Southern No. 2, Birmingham	11.00	11.00	11.00	12.00
**No. 2X, Virginia furnace	17.75	17.75	17.81	18.00
**No. 2X, Eastern, del. Phila.	14.01	14.16	14.38	16.01
Malleable, valley	14.50	14.50	14.50	16.50
Malleable, Chicago	15.50	15.50	15.50	17.00
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	25.04
Gray forge, del. Pittsburgh	15.63	15.63	15.63	17.13
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	1.75	2.00	2.00	2.35
Connellsville foundry, ovens	2.50	2.75	2.90	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	29.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	29.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	29.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00

	Nov. 19, 1932	Oct., 1932	Aug. 1932	Nov. 1931
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.89
Iron bars, Chicago	1.65	1.65	1.65	1.65
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.75	1.75	1.75	1.76
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.79½	1.79½	1.79½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.85
Sheets, No. 24, hot ann., Pitts.	2.10	2.10	2.15	2.40
Sheets, No. 24 galvan., Pitts.	2.85	2.80	2.80	2.90
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	1.85	2.00
Sheets, No. 24 hot ann., Chi.	2.25	2.25	2.35	2.55
Sheets, No. 24 galvan., Chi.	2.90	2.90	3.00	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.25	4.75	4.75	4.75
Scrap				
Heavy melting steel, Pitts.	$9.00	9.50	8.55	10.25
Heavy melting steel, eastern Pa.	7.25	7.25	6.40	7.95
Heavy melting steel, Chicago	5.75	6.00	5.40	7.65
No. 1 wrought, eastern Pa.	7.25	7.25	6.25	9.50
No. 1 wrought, Chicago	5.25	5.25	4.00	8.00
Rails for rolling, Chicago	8.25	8.00	6.50	10.00

Sheets

Automotive Specifications and New Orders Feature Market—First Quarter Prices Coming Out

SHEET PRICES, PAGE 47

Pittsburgh—Sheet mills are expected to determine shortly first quarter prices for hot rolled sheets, after having determined on a market for cold rolled grades last week. Business is not being solicited in the latter finishes, but a basis of 2.50c for light cold rolled, and 2.00c for heavy cold rolled may be expected to apply next quarter. Little change in demand was noted last week with sheet mill operations approximately 20 per cent. Galvanized sheets are holding at 2.85c, Pittsburgh, and black sheets, 2.10c to 2.20c. The Follansbee Bros. Co. mill at Follansbee, W. Va., is reopening the week of Nov. 21.

Philadelphia — Sentiment in the sheet trade here is stimulated by the announcement that the E. G. Budd Mfg. Co., Philadelphia, has booked a substantial tonnage of autobody sheets for Chrysler. This should be reflected in specifications next month.

New York—The sheet market is devoid of outstanding orders, and prices are untested.

Cleveland—Additional automotive sheet and strip orders have been placed, these with liberal specifications on Chevrolet's recent purchases accounting in large measure for steel ingot production here at a 38 per cent rate. General Motors units and Plymouth have been active in the market, but nothing of importance has developed from Ford, who, it is understood, is obtaining samples of sheets different from the usual grades used for autobody work. Operations at the Fisher Body Co.'s plant here have been stepped up. Practically all automotive orders are for rush shipment. Sheetmakers are figuring on a considerable tonnage of various grades for the new Cleveland postoffice, general contractor bids for which have just been opened. Other lines, such as stove, washing machines, refrigerators are taking material at about the same rate as in October.

Cincinnati—Sheet mills in this district will open books for the first quarter soon. A fair number of inquiries have been received.

Chicago—The tendency in sheet demand recently has been slightly downward, with automotive and other large consumers slow to increase requirements. Mill operations are slightly lower at around 15 per cent. Prices are relatively steady, with hot rolled annealed sheets quoted 2.30c, base, and galvanized 2.95c.

St. Louis—Some improvement has developed in demand for sheets, principally from stovemakers.

Birmingham, Ala.—Sheet production has been reduced, as sales have diminished. Orders are being filled promptly from stock.

Chain Inquiries Active

Chain Prices, Page 47

New York—Inquiry for 400 tons of chain and buoy shackles has been issued by the lighthouse bureau superintendent, Staten Island, N. Y., bids closing Nov. 29. The bureau will purchase 319 tons of wrought iron open-link buoy chain, ¾ to 1⅝-inch; 18 tons wrought iron stud link chain, 1¼ to 1⅜-inch, and 63 tons wrought steel buoy shackles, 8000 pieces. In addition the purchasing officer closes the same date on seven 5000-pound and three 7000-pound cast steel mushroom anchors.

San Francisco—Bids close Nov. 29 on 35,000 feet of wrought iron or open-hearth galvanized steel close-link coil chain for the Mare Island navy yard, each link to be 1 27/64-inch and ¼-inch diameter. Bids also close on 4000 feet with 1 29/32 length link for ⅜-inch diameter.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, delivered	1.70c
New York, delivered	1.90c
Birmingham, base	1.70c
Philadelphia, delivered	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, delivered	2.01c
New York, delivered	2.05c
St. Louis, delivered	2.04c
Birmingham, base	1.85c
San Francisco c.i.f.	2.32½c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.10c to 2.20c
Gary, Ind. Harbor, base	2.20c to 2.30c
Chicago, delivered	2.25c to 2.35c
New York, delivered	2.45c to 2.55c
Philadelphia, del.	2.41c to 2.51c
Birmingham, base	2.35c
St. Louis, delivered	2.54c
San Francisco, c.i.f.	2.85c
Detroit, delivered	2.28½c

GALVANIZED NO. 24

Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, delivered	3.00c
Philadelphia, delivered	3.16c
New York, delivered	3.20c
Birmingham, base	3.00c
St. Louis, delivered	3.19c
San Francisco, c.i.f.	3.50c

AUTOBODY NO. 20

Pittsburgh, base	2.55c to 2.65c

FURNITURE

Pittsburgh, No. 10 heavy	2.40c to 2.50c
Pittsburgh, No. 20 light	2.90c to 3.00c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.30c
Gary, base	2.40c
St. Louis, delivered	2.67½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.00c
Gary, Ind. Harbor, base	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.31c
New York, delivered	2.35c

COLD ROLLED NO. 20

Pittsburgh, base	2.50c
Gary, Ind. Harbor, base	2.60c
Chicago, delivered	2.65c
Philadelphia, delivered	2.81c
New York, delivered	2.85c

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing (9-11 gage)	$55.00
(12½ gage and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, delivered	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Buffalo, delivered	1.85½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Birmingham, Ala. base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.00c
St. Louis, delivered	1.94c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, delivered	1.75c
New York, delivered	1.87c
Boston, delivered	2.00½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, delivered	1.91c
New York, delivered	1.95c
Boston, delivered	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c
San Francisco, c.i.f.	2.10c

RAIL STEEL

Chicago Heights	1.50c
Eastern mills	1.35c

IRON

Chicago, base	1.60c to 1.65c
New York, delivered	1.85c to 1.90c
Philadelphia, delivered	1.81c to 1.86c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
Chicago, billet	1.50c to 1.60c
Chicago, rail steel	1.30c
Philadelphia, cut lengths	1.86c
Cleveland, cut lengths	1.75c

Cold-Finished Bars, Shafting

Base, Pittsburgh

10,000 to 19,999 pounds	1.70c
20,000 to 59,999 pounds	1.65c
60,000 to 99,999 pounds	1.60c
100,000 pounds and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Tin and Terne Plate

Per 100-pound box, Pittsburgh

*Tin plate, coke base, cont.	$4.25
Tin plate, coke base, stock	3.85
Long ternes, 24, unassorted	2.80

Gary, Ind., base 10 cents higher

Alloy Steel

Hot Rolled—F.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O.

Hot rolled; base 2.45c to 2.65c, mills; differentials to various consumers

S.A.E.	Alloy Diff.		4600 .20 to .30 Mo. 1.25-1.75 Ni. 1.05
2000	0.25	5100 .80 - 1.10	
2100	0.55	Cr.	0.45
2300	1.50	5100 Cr.	
2500	2.25	spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.30	Cr., Ni., Van.	1.50
3400	3.20	Carbon van	0.95
4100 .15 to .25		9250 (flats)	0.25
Mo	0.50	9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16 in. wide Pitts.	1.45c
Do., Chicago	1.55c
Do., del. Philadelphia	1.76c to 1.81c
Do., del. New York	1.80c to 1.85c
Cooperage hoop, Pitts.	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rivets, Wrought Washers

Struc., c.l., Pitts-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleveland	70, 10 and 5 off
Washers, c.l., Pitts. dist.	$6.50 to 6.75 off
Do., Chicago district	7.00 to 7.50 off

Rails, Track Material

Standard rails, mill	$40.00
Relay rails, Pitts, 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	23.00 to 25.00
Light rails, 25-45, mills	$30.00
Light rails, Chicago	$32.00
*Angle bars, mills	2.55c
Spikes, railroad, mills	2.40c
Spikes, boat, barge, Pitts.	2.65c
Track bolts, Chicago	3.50c
do., standard, jobbers	73 off list
Tie plates, Pitts.	$35.00
Tie plates, Chicago	$35.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list,
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-25 off
Upset 1 in. diam. and smaller 80-25-10 off

SQUARE HEAD SET SCREWS

Upset, 1 in. and smaller ..... 75-10-10 off
Headless set screws ..... 75-10 off
Upset, larger than 1 in. ..... 75-10 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do., less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Steel sheet piling, Pitts.	1.90c

Bars

New Quantity Extras Impending —Orders Shrinking on Mill Books—New Business Slow

BAR PRICES, PAGE 47

Pittsburgh—Announcement is expected momentarily of new quantity extras on merchant bars as well as plates and shapes. The extras are being designed to bring legitimate mill business to mills and divert small orders to warehouse channels. Reinforcing steel continues the major outlet for hot-rolled bar stock. There have been few new automotive orders and when recent bookings are completed, as they will be shortly, bar mills in this district are faced with a further lack of business. In the main, prices are firm and 1.60c, Pittsburgh, is being done on carbon bars. Alloy bars are based on 2.45c to 2.65c.

Chicago—Steel bar specifications show some tendency to decline, demand from automotive interests and from some miscellaneous consumers, however, being well maintained. Automotive demand is light but is improved moderately since a month ago. Farm implement manufacturers defer expansion of production, and bar orders are correspondingly affected. Railroad requirements show occasional gains but tonnage still is small. Prices generally are steady, tested by only small lots with the market 1.70c, Chicago, for soft steel bars, 1.65c for bar iron and 1.50c for rail steel.

Philadelphia — Commercial steel bars have undergone no test of the prevailing price of 1.60c, Pittsburgh.

Cleveland—Commercial steel bar sales this month are ahead of those in the comparable period in October, though individually small. Good orders have been placed recently by automotive interests, wheelmakers, bolt and rivet manufacturers, and road machinery builders. Railroad business has failed to expand. Bars are firm at 1.65c, base, Cleveland.

Cold-Finished Orders Lag As Autos Take Less

Cold Finished Prices, Page 47

Pittsburgh — Orders for cold-finished steel bars have declined the past ten days, mainly due to absence of specifications from automotive producers. These consumers have not yet bought for quantity production assemblies and many orders of a month ago have developed to be for automobiles for stock purposes. Buyers are paying 1.70c for cold-finished bars in 5 to 10-ton lots. Discounts for quantities over this amount are rarely tested.

Tin Plate Price Reduced 50 Cents Per Base Box

Tin Plate Prices, Page 47

Pittsburgh — Coke tin plate has been reduced 50 cents to $4.25, per 100-pound base box. The former price was in effect since approximately a year ago. It is expected this reduction will release considerable pending business for 1933. Tin mill operations continue 40 per cent.

The reduction in the contract price is not likely to bring a corresponding decrease on stock tin plate, and apparently the price of the latter will remain $3.85.

Refractory Sales Are Small; Rush Delivery Asked

Refractories Prices, Page 54

Pittsburgh—Small specifications for rush delivery are the only feature in a slow refractory brick market. First quality fire clay brick is nominal in this district at $35 per thousand, with seconds and an unsettled market condition in Missouri detrimental factors. First quality magnesite brick is quoted $61.50 and chrome brick $42.50 per net ton.

Plates

New Basing Method in Some Districts to Clarify Fabricated Prices—Market Is Quiet

PLATE PRICES, PAGE 47

Pittsburgh — Where fabricated plates are needed for a specific job, fabricating shops will be required to figure on the same basis as structural steel fabricators are now doing. Plate prices will be based by the mills on the nearest basing points to the job, plus a freight allowance to the job's location. No new plate basing points will be established, but a clearer definition of plate prices is expected to result. Mill business is extremely quiet. Some 18 bidders submitted prices ranging from approximately $35,000 to $73,000 for 430 tons required in three oil barges for the Chicago engineer. Plate business generally is based on 1.60c, Pittsburgh.

Boston—Plate buying by boiler shops, shipyards and tank builders has slowed down. Fabricated steel pipe demand is light. Prices are unchanged at 1.70c, Coatesville, Pa.

Cleveland—Small miscellaneous orders from manufacturers constitute the bulk of plate business. Boiler shops and tank builders are not buying appreciable amounts. Plates are steady at 1.60c, base, Pittsburgh.

Chicago—Plate demand generally is unimproved despite a small increase in orders from some railroads. Tank inquiry is fairly active, but orders are light. Car builders lack business and plate requirements for this industry are limited largely to repair work. Plates continue 1.70c, Chicago.

New York—Platemakers expect the New York Central railroad to inquire soon for several hundred tons for car repairs. General buying is slow.

Philadelphia—An inquiry for 1150 tons of 48-inch pipe for the District of Columbia water commission, Washington, features the plate market. An improvement in miscellaneous plate demand is noted in some quarters. Sellers are endeavoring to obtain 1.70c, base, Coatesville, Pa., on car lots.

Contracts Placed

200 tons, tanks for Union Oil Co., at Los Angeles and Wilmington, Calif., to Chicago Bridge & Iron Works, Chicago.

100 tons or more, derrick barge, Frederick Snare Corp., New York, to McClintic-Marshall Corp., Bethlehem, Pa.

Contracts Pending

1150 tons, for 48-inch pipe, water commission, Washington, D. C.

430 tons, three oil barges, 120 x 30 feet, for Chicago engineers; Midland Barge Co., Midland, Pa., low.

270 tons, floating dock caisson, bureau of yards and docks, navy department, Washington, for installation at Norfolk, Va.

120 tons, department of plants and structures, bridge repairs, New York; Seaport Contracting & Supply Co.,

New York, low.

Unstated tonnage, steel barge for Jacksonville, Fla., engineers, 70 x 29 x 5½ feet; Midland Barge Co., Midland, Pa., low.

Unstated tonnage, floating derrick, Brooklyn, N. Y., navy yard.

Unstated tonnage, 10 large buoys, eight bell and two whistle, lighthouse bureau, Staten Island, N. Y.; William B. Pollock Co., Youngstown, O., low with total bid, $7320. Compressed Gases Inc., New York, low on 300 acetylene gas cylinders, 180 cubic feet capacity each. Bids Nov. 10 and 11.

Wire Volume Lessens As Jobbers Buy Little

Wire Prices, Page 47

Chicago—Changes in demand for wire products are slight, although the tendency is downward. Activity in wire products in the agricultural districts is light, while specifications for manufacturers' wire are spotty and show no marked gains. Improvement in automotive consumption is slow. Prices are fairly steady at $2 for carload lots of wire nails and 2.25c for plain wire.

Worcester, Mass.—Wire demand in some departments has lessened, although operations as a whole show little change. Some specialties have registered slight gains. Shipments to jobbers continue spotty. Demand for manufacturers' wire has not attained the activity hoped for. Prices are steady and unchanged, with plain bright wire 2.30c, Worcester.

Hartford, Conn.—Approximately 29,625 feet of wire rope railing with type A anchorages is required for Connecticut highways in contracts opened Nov. 7, and several thousand linear feet of fencing.

Pittsburgh — Both shipments and specifications for nails, plain wire and other wire products tend to be less than they were in October. The chief reason has been indisposition of jobbers to lay in stock, as well as poor demand by the manufacturing trade for wire. In the main, prices are well upheld with $1.95 the base for straight carload lots of nails and 2.20c, Pittsburgh, on wire. First quarter prices have not been determined and will not be announced much before the second week in December.

Cleveland—Despite approach of inventory season, mill shipments of wire and wire products are expected to hold recent levels over the remainder of the year, as manufacturers' stocks are low. Some mills that have been reducing their stocks are unable to give as quick shipment as formerly. Prices are steady.

Railroads

Angle Bars Reduced, Final Item In Readjustment—Rail and Car Needs Slow to Come Out

TRACK MATERIAL PRICES, PAGE 47

Pittsburgh—Angle bars have been reduced $4 a ton to 2.55c, mill. This reduction is the last in standard railroad track fastenings, as spikes and tie plates had been cut $4 and $2 per ton, respectively, recently. These moves have not yet resulted in actual orders from railroads for these products and there have been no standard rail purchases the past week. The New York Central railroad has placed a round tonnage of rivets and bolts but as the repairs are to wooden cars, no steel plates or car shapes will be required. Operations in the Edgar Thomson rail mill ceased Nov. 16, having been extended from Nov. 12. The latter date was set a week ago as the closing but there was some production for stock in view of anticipated rail orders. Light rails are in a nominal market with an asking price of $30 per ton, although less might be done if there were actual buying. Standard open-hearth rails are quoted $40 a ton and tie plates $35 a ton. Large railroad spikes are 2.40c, mill. The Pennsylvania railroad has awarded air brake equipment for 1285 freight cars to the Westinghouse Air Brake Co., Wilmerding, Pa.

Cleveland—From present prospects, rail purchases in this country for 1933 are not likely to be more than 60 per cent of those for 1932, due chiefly to the heavy carryover of rails purchased in 1931 and 1932, according to some leading railmakers' estimates. No purchases are expected the remainder of this year from carriers with headquarters here, though, of course, business improvement may alter the local and national situation. Railroads' net operating income in September showed a good increase; October, also, was satisfactory, but current merchandise loadings indicate lower income for November. Railroad purchases are being held to miscellaneous steel requirements for repair purposes.

Chicago—Mills are receiving larger releases against orders for track fastenings, while specifications for various steel products, principally for equipment repair work, have been moderately heavier recently. New rail buying is lacking, but production of small lots released against orders continues. Releases of track material have been relatively more active than has been demand for rails. Angle bars have been reduced from 2.75c to 2.55c. This follows the recent reduction in standard rails $3 a gross ton. The equipment market continues quiet, no additional inquiry being noted while what small business has been pending remains to be closed.

Philadelphia — Delaware & Hudson railroad has awarded 3000 tons of rails to Bethlehem Steel Co., Westinghouse Air Brake Co. has booked a $150,000 order for 1285 freight cars to be built by the Pennsylvania railroad. The Reading railroad has deferred action on its remaining plate requirements for another fortnight.

Car Orders Placed

Navy, two freight cars to General American Car Co., for Hog Island, Philadelphia.

Rail Orders Placed

Delaware & Hudson, 3000 tons, to Bethlehem Steel Co.

New York Central releases 6000 tons.

Bolt, Nut Needs Hold Level; Jobbers Buy Little

Bolts, Nuts, Rivets Prices, Page 47

Pittsburgh—New York Central railroad is distributing a round tonnage of rivets, bolts and nuts for its car repair program. Several district bolt and nut producers are sharing. Jobbers' bolt and nut orders are not as frequent as a month ago. The total specifications are the same as in October. Discount of 75 off list is the bolt and nut price, although large rivets are nominal at 2.25c, Pittsburgh. First quarter books have not yet been opened.

Cleveland—Rivet orders from railroads and structural shape fabricators increased considerably during the week. Automotive releases for nuts and bolts continue good.

Chicago—Bolt, nut and rivet specifications hold to the quiet rate of preceding weeks, with only small changes noted in requirements of principal consumers. The movement of jobbers' stocks is slow. Prices are well maintained at 75 off for bolts and nuts and 2.35c, Chicago, for large rivets.

Structural Shapes

Awards Increase with 10,000 Tons Placed for Canadian Bridge—Eastern Mills Adopt New Plan of Quoting, for Delivery to Job — Building Projects Total $350,000,000

STRUCTURAL SHAPE PRICES, PAGE 47

Cleveland—Fabricators estimate major building projects now in the active stage in this country call for expenditures amounting to more than $300,000,000. These include public and private buildings requiring substantial tonnages of steel, but not bridges. In many instances the general contracts have been awarded. Lundoff-Bicknell Co., Cleveland, is low for the general contract for the Cleveland postoffice requiring approximately 11,500 tons, and is expected to receive the contract. Fort Pitt Bridge Co., Pittsburgh, is low for the structural steel.

Ohio state road and bridge lettings Nov. 22 will take 933 tons of shapes, and 1869 tons of concrete bars. An inquiry has appeared for figures on the construction of a brewery. Miscellaneous small jobs are numerous.

Boston—Structural steel buying is moderate,. Pending tonnage includes 625 tons for spans in New Hampshire and Vermont. Prices bid by fabricators continue easy.

New York—General contract bids are in on 13,000 tons of new construction in the East, mainly government projects. Shape producers now are quoting plain material on a basis of delivery to the site, this being the basing price quotation, plus usual freight and the fabricating-in-transit charge to the site, this action being directed toward abuses in some fabrication-in-transit transactions. Railroads also now are charging 50 cents a ton for unloading from car or lighter, when railroad equipment is used. Pennsylvania railroad is closing Nov. 30 on structural steel requirements.

Philadelphia—Action by leading shape mills in quoting prices to fabricators on a basis of f.o.b. job, instead of mill, is an effort to adjust fabrication-in-transit privileges of fabricators in certain localities, that competitive conditions may become better stabilized. Some fabricators are said to have been at a disadvantage owing to the necessity of paying a back haul and stopover charges, which have been higher than the stopover rates to fabricators on the line of a straight haul. The situation was aggravated by rate revisions and establishment of surcharges earlier in the year. McCloskey & Co., Philadelphia, are low on one of two alternatives for the general contract for the Philadelphia customs house, requiring 8500 tons. John McShain, Philadelphia is low on the other. Specifications for 1000 tons for the American Philosophical society's building here are expected out in two weeks.

Pittsburgh — Producers in this district are quoting steel for structural shop fabrication under the new system inaugurated here and in the East. This plan is intended to align plain material suppliers' bids to the fabricators, and clearly place any discrepancies in fabricated prices up to the fabricator's individual shop costs. The base price of 1.60c is continuing for plain material.

Chicago — Shape inquiries are light in point of number, although tonnage has been bolstered by requests for bids on 3000 tons for the Halsted street bascule bridge superstructure in this city. Around 3000 tons have been placed for two bridges in Illinois. Other inquiries are limited to small lots.

Contracts Placed

10,000 tons, St. Lawrence river, Lachine and Caughnawaga, Que., to Dominion Bridge Co., Lachine, Que.

2000 tons, postoffice, Albany, N. Y., to Harris Structural Steel Co., New York; through Kenny Bros., New York, general contractors.

1800 tons, bridge, Ottawa, Ill., to Wisconsin Bridge & Iron Co., Milwaukee.

1000 tons, bridge, Joliet, Ill., to Mississippi Valley Bridge & Iron Co., Decatur, Ill.

900 tons, piling, jetty, eastern entrance to Big Lagoon, Pensacola, Fla, to Bethlehem Steel Co., Bethlehem, Pa.; W. Horace Williams Co., New Orleans, general contractor, Federal project.

815 tons, lock and upper gate lock, dam 20, Canton, Mo., to R. C. Mahon Co., Detroit; Maxon Construction Co., Dayton, O., general contractor.

720 tons, highway bridges, Texas, to Wyatt Metal & Boiler Works, Dallas, Tex.

675 tons, highway bridges, Kingston, N. Y., and New Paltz, N. Y., to Lackawanna Steel Construction Co., Buffalo.

350 tons, also 50 tons of machinery, for state bridge, Willapa river, Washington, to Pacific Car & Foundry Co., Seattle; Sheble Construction Co., Seattle, general contractor.

315 tons, industrial building, Calco Chemical Co., Bound Brook, N. J., to Harris Structural Steel Co., New York.

285 tons, highway bridge, Housick, N. Y. to Lackawanna Steel Construction Co., Buffalo.

223 tons, widening of causeway, Yolo county, California, to Moore Drydock Co., Oakland, Calif.

215 tons, postoffice, Lynn, Mass., to McClintic-Marshall Corp., Bethlehem, Pa.; W. E. O'Neil Construction Co., Chicago, general contractor.

215 tons, state highway bridges, Otsego county and Rome, N. Y., to Lackawanna Steel Construction Corp., Buffalo.

200 tons, courthouse, Beaver county, Pa., to Pittsburgh Bridge & Iron Co., Rochester, Pa.

170 tons, bridge, Iaeger, W. Va., to McClintic-Marshall Corp., Bethlehem, Pa.

160 tons, bridge, Chicago, Milwaukee, St. Paul & Pacific railroad, to Worden-Allen Co., Milwaukee.

150 tons, viaduct over Texas & Pacific and Frisco railroads at Fort Worth, Tex., to Virginia Bridge & Iron Co., Roanoke, Va.; Bellows-Maclay Construction Co., Dallas, Tex., general contractor.

100 tons, beams and columns for Lehigh Navigation Coal Co., to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, addition to Washington baths, Coney Island, N. Y., to Berkshire Structural Steel Co., Brooklyn, N. Y.

Awards Compared

	Tons
Awards, week ended Nov. 19	**20,393**
Awards, week ended Nov. 12	**8,887**
Awards week, ended Nov. 5	**8,201**
Awards, this week in 1931	**11,734**
Av. weekly awards, 1931	**34,236**
Av. weekly awards, 1932	**16,361**
Av. weekly awards, Oct.	**29,641**
Awards, to date, 1931	**1,662,462**
Awards, to date, 1932	**768,971**

Contracts Pending

11,500 tons, postoffice, Cleveland; Lundoff-Bicknell Co., Cleveland, low for general contract; $2,727,000 if limestone is used; $2,780,000, if sandstone. Fort Pitt Bridge Co., Pittsburgh, is low for structural steel.

8500 tons, custom house and appraiser's stores, Philadelphia, McCloskey & Co., Philadelphia, low limestone, $2,574,000; John McShain, Philadelphia, low for marble, $2,791,000.

8000 tons, Archives building, Washington; Fleisher Engineering & Construction Co., low, for granite; George A. Fuller Co., low for limestone.

3015 tons, viaduct, Pennsylvania and Lehigh Valley railroad tracks and yards, route 21, section 1-A, Newark, N. J.; J. F. Chapman & Son, Hillside, N. J., low on general contract.

3000 tons, Halsted street bascule bridge superstructure, Chicago; bids Nov. 28.

2300 tons, appraiser's store, Baltimore; general contract bids opened.

2000 tons, hospital buildings, Kings Park, N. Y., Seglin Construction Co., low.

1900 tons, including 880 tons of steel piling 582 structural steel, 445 steel castings, lock 4, Mississippi river, Alma, Wis.; Ouilmette Construction & Engineering Co., Chicago, low on general contract. Work also includes

47 tons of steel forgings and 27 tons of bolts.

1500 tons, central heating plant, Washington, Dec. 1. General contract does not include boilers, stokers and other equipment.

1500 tons, courthouse, Fort Worth, Tex.; bids Dec. 21.

1100 tons, viaduct, 255th street, Bronx (New York); Edward Kloberg Inc., low.

735 tons, psycopathic ward, General hospital, San Francisco; bids postponed indefinitely.

700 tons, addition to postoffice, San Francisco; bids Dec. 28.

690 tons, state highway bridges in Lawrence and Warren counties, Ohio; general contracts to Dodge-Hussey Inc., Columbus, O.

600 tons, highway bridges, Miller county, Missouri.

500 tons, state bridge, Daniel Webster highway, New Hampshire, bids at Concord.

370 tons, bridges, Missouri Pacific railroad.

300 tons, postoffice, Rochester, Minn.; bids Dec. 21.

251 tons, double span steel truss bridge, Clinton county, Pennsylvania; bids at Harrisburg, Pa., Dec. 2; included 35 tons of plain steel bars.

250 tons, addition to general exhibits building, World's fair, Chicago.

240 tons, postoffice, New Castle, Del.; General Building Contractor, Detroit, low for general contract.

208 tons, steel truss bridge, Northumberland county, Pennsylvania; bids at Harrisburg, Pa., Dec. 2.

200 tons, shapes and bars, postoffice, New Castle, Pa.; A. W. Kutsche & Co., Detroit, low.

150 tons, commercial building for J. R. Seltzer, Philadelphia.

150 tons, high school, Mahanoy, Pa.

150 tons, waterworks, Wilmette, Ill.

144 tons, state bridge, Clark county, Arkansas; bids Nov. 22.

125 tons, bridge, Delaware City, Del.; United States engineer, Wilmington, Del., will open bids Dec. 15.

121 tons, double span plate girder bridge Lackawanna county, Pennsylvania; bids at Harrisburg, Pa., Dec. 2; included 46 tons of plain steel bars.

115 tons, state bridge, Springfield, Vt.

100 tons, bridge repairs, department of plans and structures, New York; Seaport Contracting & Supply Co., New York, low.

Unstated tonnage, postoffice, Norfolk, Va.; Consolidated Engineering Co., Baltimore, low for general contract.

Hoist Orders Shade Higher

New York—Members of the Electric Hoist Manufacturers' association report the number of hoists ordered during October increased 4.838 per cent as compared with the previous month, and the value of such orders increased 0.703 per cent as compared with September. Shipments were 14.474 per cent smaller in October than in September.

Dravo Contracting Co., Neville Island, Pa., is completing construction of a large hammer head crane at Bremerton, Wash., in the Puget Sound navy yard.

Concrete Bars

Volume Shrinks as Outdoor Work Is Held Up on Account of Winter—Larger Tonnages in Sight, with Award of General Contracts for a Number of Federal Buildings

REINFORCING BAR PRICES, PAGE 47

New York—On smaller lots of billet steel reinforcing bars prices are steady, but on larger orders occasional shading is noted. Rail steel is steady at 1.35c, eastern mills, but untested due to lack of buying. A fair volume of bars are pending for state hospitals and other public work.

Boston—Some Connecticut highway tonnage has been held up until spring. Maine and Rhode Island have bought 500 tons for highways. Prices on small lots are steady; larger being subject to shading.

Philadelphia—Approximately 700 tons of concrete bars are required for the customs house here, and 550 tons for the appraiser's store at Baltimore, on which general contract bids were opened last week. Wallin & Co., New York, subcontractors, may purchase 1500 tons of bars and steel mesh for the Thirtieth street postoffice here. Prices of billet bars in cut lengths are soft, at 1.45c to 1.55c, Pittsburgh.

Pittsburgh—Base of 1.60c, Pittsburgh, is fairly firm on small lots of concrete bars. However, on large orders concessions are apparent. Unsettled prices in various sections of the country bring out bids which are based on 1.40c and 1.50c for billet bars. Sales of reinforcing steel have diminished this month, as jobbers are refusing to stock much material.

Cleveland—For the Cleveland postoffice, the general contract for which is expected to be awarded to the Lundoff-Bicknell Co., Cleveland low bidder, 70,000 square feet of wire mesh of various sizes and 115 tons of concrete bars will be required. Bids go into the state highway commission Nov. 22 on road and bridge jobs, taking 1900 tons, including 1364 tons for the Brookpark, village, Cuyahoga county, bridge. A bridge in Ottawa county will take 209 tons.

Chicago—New inquiry for reinforcing bars includes 450 tons for waterworks at Wilmette, Ill. Awarding of contracts for Illinois road and bridge work has been deferred and only a small portion of the 2000 tons involved are expected to be placed this winter. Other inquiries and awards are smaller.

Awards Compared

	Tons
Awards, week ended Nov. 19	**2,669**
Awards, week ended Nov. 12	**1,650**
Awards, week ended Nov. 5	**2,388**
Awards, this week, 1931	**11,567**
Av. weekly awards, 1931	**6,808**
Av. weekly awards, 1932	**4,139**
Av. weekly awards, Oct.	**5,397**
Awards, to date, 1931	**337,667**
Awards to date, 1932	**194,566**

Contracts Placed

535 tons, State hospital, Brentwood, N. Y., to Rawlins Co., New York; through Industrial Engineering Co., New York, subcontractors.

300 tons, bridges, Limestone county, Texas, to Sheffield Steel Corp., Kansas City, Mo., through Purvis & Bertram, Fort Worth, Tex., general contractor.

288 tons, highway, federal aid project E-110-1, Etna, Me., to Bancroft & Martin Rolling Mills Co., Portland, Me. Bulk of material furnished by state. Joseph McCormick Jr., East Providence, R. I., is general contractor.

225 tons, three state bridges, Rhode Island; material to be furnished by state; bulk of tonnage to Kalman Steel Corp., Bethlehem, Pa. Largest job, 200 tons, Stillwater viaduct, Smithfield, R. I.; C. W. Blakeslee & Sons Inc., general contractor.

206 tons, wire mesh, state highway work in Santa Clara county, California, to unnamed interest.

200 tons, postoffice, Ada, Oklahoma, to Sheffield Steel Corp., Kansas City, Mo.; Rogers & Leventhal Inc., Chattanooga, Tenn., general contractors.

180 tons, sewer, Oneonta, N. Y., to Truscon Steel Co.; F. H. McGraw & Co., New York, general contractors.

142 tons, viaduct over Texas & Pacific and Frisco railroads, Fort Worth, Tex., to Concrete Engineering Co., Fort Worth; Bellows-Maclay Construction Co., Dallas, Tex., general contractor.

135 tons, state highway work in San Diego county, California; to unnamed interest.

129 tons, Pacoima wash spreading grounds No. 2, Los Angeles county, California, to unnamed interest.

121 tons, state bridge, Willapa river, Wash., te Soule Steel Co., Portland, Oreg.; Sheble Construction Co., Seattle, general contractor.

108 tons, highway work in Yellowstone Park, Mont., to Kalman Steel Corp., Bethlehem, Pa.

100 tons, two hospital projects, eastern Pennsylvania, to Concrete Steel Co.,

Philadelphia; through M. A. Long, Baltimore.

Contracts Pending

1900 tons, various road and bridge jobs, including 1364 tons for Brookpark village, Cuyahoga county, Ohio, bridge; bids to state highway commission, Columbus, O., Nov. 22.

700 tons, customs house, Philadelphia; general contract bids opened.

550 tons, appraiser's store, Baltimore; general contract bids opened.

485 tons, viaduct over Pennsylvania and Lehigh Valley railroad tracks and yards, route 21, section 1-A, Newark, N. J.; J. F. Chapman & Son, Hillside, N. J. low on general contract.

450 tons, barrack buildings, Barksdale field, Shreveport, La.; Worsham Bros., Knoxville, Tenn., general contractor.

356 tons, lock 4, Mississippi river, Alma, Wis.; Ouilmette Construction & Engineering Co., Chicago, low.

115 tons, and an unstated tonnage of wire mesh, 70,000 square feet of various sizes, for Cleveland postoffice; Lundoff-Bicknell Co., Cleveland, low for general contract.

141 tons, fabric or bar mat reinforcement, highway, Long Ridge road, Stamford, Conn.; Paul Bacco, low for general contract.

140 tons, state highway work in Clinton, Lackawanna and Schuylkill counties, Pennsylvania; bids at Harrisburg, Pa., Dec. 2.

125 tons, state bridge and approaches over B. & M. tracks, Revere, Mass., Coleman Bros. Inc., Boston, general contractor.

122 tons, state highway work in Ventura county, California; bids Nov. 30.

100 tons, two state bridges in Colorado; bids at Denver, Nov. 16.

Lake Ore Movement Closing This Week

Iron Ore Prices, Page 54

Cleveland—Shipments of iron ore from upper lake ports will be practically completed for the season this week. One or two additional cargoes may be loaded before the end of November; but nothing will be carried in December, according to present plans. The United States Steel Corp.'s vessel subsidiary has finished for the season. It is now apparent that 1932 shipments will total approximately 3,600,000 tons. The Lake Superior Iron Ore association's current report on iron ore follows:

	Tons
Consumed in September	697,185
Consumed in October	735,010
Increase in October	37,825
Consumed in October, 1931	1,451,174
On hand at furnaces Nov. 1, 1932	27,233,521
On Lake Erie docks Nov. 1, 1932	5,223,086
Total at furnaces and Lake Erie docks Nov. 1, 1932	32,456,607
Total, Nov. 1, 1931	30,767,233

Pipe

November Business Represents Year's Low Point—Pittsburgh Mills Under 10 Per Cent

PIPE PRICES, PAGE 61

New York—Demand for cast pipe is in small scattered lots with few new inquiries as large as 100 tons. Two large municipal jobs are nearing maturity in this district, taking several thousand tons. Prices are unchanged. United Dry Docks Inc. New York, is low on one alternate for hydrant and gate parts for New York city at $7023, delivered.

Approximately 400 tons of 10¾-inch pipe is pending for foundations for an addition to a New York hospital. An inquiry is pending from the Argentine state oil fields for 1500 tons of miscellaneous sizes of steel pipe.

Boston—Cast pipe buying is well below the usual seasonal volume. Demand for steel pipe and other tubular products also is small. Chapman Valve Mfg. Co. Indian Orchard, Mass., is low on gate valves for the navy with a bid of $4640, delivered to Boston, Brooklyn and Philadelphia.

The gas company at Bristol, Conn., is in the market for about 90 tons of 6-inch pipe.

Pittsburgh — November is proving to be the lowest point of the year in demand for tubular products. The Pure Oil Co.'s line from Toledo, O., to Detroit, has not been awarded as yet, due to delay in regard to terms for payment. Four thousand tons of 6-inch seamless pipe are required, but payment is being asked to extend over 22 months. Pipe mill operations in this district have sagged to below 10 per cent.

Cleveland—A substantial amount of electrical conduit, estimated by some makers at 150 to 200 tons, is required for the new Cleveland postoffice, on which general contract bids have been opened, in addition to approximately 200 tons of other miscellaneous sizes of pipe. The general market for pipe is quiet.

Chicago—Cast pipe awards and inquiries continue slow. Action on some work pending recently has been deferred because of difficulties in financing. An injunction is being sought to restrain construction of the new waterworks at Wilmette, Ill., requiring 800 tons of pipe, on which bids recently were taken. Prices continue fairly steady.

Birmingham, Ala.—Two local pipe plants will be idle a week, after having operated two weeks on good schedules. This represents the intermittent character of business.

Cast Pipe Pending

450 tons, waterworks, West Monroe, La. R.F.C. authorizes purchase of $45,000 worth of city bonds.

Unstated tonnage, 16,000 feet of 6 and 8-inch class C, Campbellsport, Wis.; Central Foundry Co., Birmingham, Ala., low.

Bids Close Nov. 29 on Material for Panama

New York—Bids close Nov. 29 on the following for Panama: 7200 pounds, cold-rolled machining stock bars, including 2000 pounds, 2¼-inch; 50,000 pounds, No. 7 and 10 galvanized sheets; 1200 pounds, hot-rolled copper-nickel alloy bars; 20,000 feet, ⅝ to ⅞-inch, extra strong cast steel wire rope, eight strands of 19 wires each; 4200 feet, high-grade ploy steel wire rope, 1½ inch diameter; 7000 pounds, soft steel galvanized wire, No. 8 and 12 gage; 5000 square feet, No. 10 multicrimp galvanized wire cloth; 10,050 linear feet, unstiffened No. 18 galvanized wire lath; 250 galvanized steel or wrought iron screw-pin chain shackles; 10,000 pounds common bright wire nails and 5000 pounds, three-inch steel foundry nails; 12 brass melting crucibles for use with No. 1505 Steele-Harvey furnace.

Financial News of Steel Industry

SPANG CHALFANT & CO. INC., Pittsburgh, reports net loss of $61,971 in the third quarter, compared with a loss of $150,466 in the second quarter. Net loss for nine months, after charges, was $639,037, against $49,327 a year ago.

□ □ □

Corrigan, McKinney Steel Co., Cleveland, reports for the year ended April 30 net loss, after depreciation and other charges, of $1,754,259. In the preceding year the company's loss was $1,617,779.

Strip

Automotive Needs Give Market Most Support—Hot-Rolled Has Best Call—Prices Steady

STRIP PRICES, PAGE 47

Pittsburgh — Narrow hot-rolled strip, firm at 1.45c, Pittsburgh, is in steadiest demand. The market is no stronger than a month ago but is aided by specifications of several automotive accounts whose orders have been of benefit to Pittsburgh strip mills. One producer has placed its 16-inch mill on, along with its 8 and 12-inch. Another producer, down last week, will run two mills this week. Strip moving eastward to oil burner manufacturers is tapering. On a recent inquiry two carloads of hot strip developed unified quotations of 1.45c, base, by several sellers. Cold strip is miscellaneous, generally based on 2.00c.

New York—Steel strip is quiet at 1.45c, Pittsburgh, for cold-rolled and 2.00c for hot rolled.

Philadelphia—Sellers of steel strip have encountered one of the dullest weeks in recent months with prices nominally unchanged.

Cleveland—New orders from automotive interests, chiefly General Motors units, have lifted the volume of strip business placed with some makers this month to double the same period last month. Plymouth also has placed good orders. Nothing of importance has developed from Ford. Practically all automotive business is for rush shipment. Hot-rolled strip holds at 1.45c to 1.50c, base, Pittsburgh; and cold-rolled generally is 2.00c, base, Cleveland, with some sales at 1.90c.

Chicago—While strip demand for automotive requirements is fairly well maintained, specifications from small miscellaneous consumers are declining slightly and mill operations show no improvement at about 10 to 15 per cent. Prices generally continue 1.55c, Chicago, for hot strip and 2.00c, Pittsburgh-Cleveland, for cold-rolled strip.

Operating Rate Off to 19; No Rebound Now Indicated

Pittsburgh—Due to the decline of a leading mill to barely over 15 per cent last week, steel ingot capacity for the district was off two points last week to 18 per cent. Steel production in another plant continues at 19 per cent and the operating percentage in independent works is averaging 17 to 18. Nine steelworks blast furnaces out of 53 still are blowing. For this week, the operating rate seems likely to continue at 18.

Philadelphia—Eastern operations are virtually unchanged at 13-14 per cent. The holiday may bring some reduction this week.

Cleveland—Steel ingot production here in the week ended Nov. 19 was at 38 per cent, up 3 points due to lighting of a fifth open hearth by Otis Steel Co. American Steel & Wire Co. and Corrigan, McKinney Steel Co., each continued with 4 units active. No change in the rate is expected this week. In at least one instance the operating rate is higher than warranted by current consumption, the maker building up its stocks of raw steel. In another, however, an increase is said to be contemplated, based on new requirements.

Operations, week ended Nov. 19	**19**
Operations, week ended Nov. 12	**21**
Operations, week ended Nov. 5	**21**
Operations, one year ago	**31**
High for 1932, Feb. 6	**28.5**
Low for 1932, July 9	**12**

Buffalo—Steelmaking operations increased three points to 25 per cent in the week ended Nov. 19. A sharp curtailment over the coming week-end is in prospect on account of the Thanksgiving holiday. Automobile requirements are largely responsible for the current good rate. Eight open hearths are active here this week.

Youngstown, O.—Steel operations here last week sagged one point to 16 per cent on a further reduction of activities by independent steelmakers. Production this week is expected to rebound to 17 per cent, but the contraction of buying noticed since Nov. 1 continues. Finished output as well as ingot production here is increasingly irregular.

Chicago—A reduction in number of active open-hearth furnaces has resulted in a slight decrease in ingot production, which averaged about 17 per cent the past week. Operations are spotty, and in some cases ingot output has been reduced to a greater extent than finishing mill operations. Blast furnace schedules are steady at eight active stacks out of 36. Finishing mill schedules are off moderately.

Birmingham, Ala.—Steelmaking operations dropped 12½ points to 12½ per cent in the week ended Nov. 19, but some recovery is expected this week. Tennessee Coal, Iron & Railroad Co. has shut down the only blast furnace stack it was operating.

Warehouse Selling Close To That of Past Months

Warehouse Prices, Page 61

New York—Warehouse volume holds to the dull pace of recent weeks, buying being well spread with no tonnage orders. Sheet prices are steadier. A large part of imported steel is finding its way to the ultimate buyer through the small iron and steel fabricating shops, which are in competition with warehouses on much of this business.

Philadelphia—Warehouse trading is maintaining the October rate in volume, with prices unchanged.

Pittsburgh—Bookings of local warehouses continue at the same rate as in October. Bars and small shapes continue to lead demand. No change is reported in prices.

Detroit—Following a slight lull at election time, demand for iron and steel out of warehouse has rebounded to about the October level. Prices are unchanged.

Cincinnati—Warehouse business this month has been holding steady at the October rate. A revision in the system of quotations on boiler tubes has gone into effect.

Chicago—Sales show some decrease but the decline is seasonal and no more than had been anticipated. Prices generally are steady and unchanged.

St. Louis—Rush orders for seasonal goods has helped business of iron and steel warehouses the past several days. Tubing, sheets plates, and heavy hardware are moving in better volume than heretofore. As a whole, the volume this month is slightly below that of the like period in October.

Wins Two Safety Awards

Macintosh-Hemphill Co., Pittsburgh, has received awards from the National Safety council and the foundry and shop division of the Inter-Plant Safety Council of Western Pennsylvania for operating six months without a lost time accident in the company's Garrison plant, Pittsburgh.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Asterisk denotes price change this week

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$15.50
Pittsburgh, dist. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Philadelphia, delivered	13.51 to 13.76
Virginia furnace	17.25
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	18.91 to 19.91
Buff., all-rail, Brooklyn	18.90
Buff., all-rail, Newark	17.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	15.75 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.40
Buffalo, all-rail, Newark	17.78
Buff., all-rail, Boston	19.91 to 20.91
Virginia furnace	17.75
Eastern, del. Phila.	14.01 to 14.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	14.51 to 14.76

MALLEABLE

Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Chicago, furnace	15.50
Buffalo fur., local del.	16.50
Eastern Penna, delivered	14.63 to 18.91
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	14.00
Pittsburgh, delivered	14.63 to 15.13
Eastern Penn., del.	13.50
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50 to 15.00
Pittsburgh, furnace	15.00
Pittsburgh, delivered	15.63 to 16.13

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.00
Pittsburgh district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19; 15—$21 to $23.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville furnace	$1.75 to 2.00
*Connellsville foundry	2.50 to 4.25
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21 to 8.81
Chicago, ovens, outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.	7.75
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, O., ovens Connell., basis	4.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania New Jersey furnaces

(Nominal)

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

(Nominal)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot, short ton unit, duty paid	$10.00 to 10.25
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

(Nominal)

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50%	22 cents
Brazilian, 46-48%	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$35.00
*Missouri	25.00 to 35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet and East Chicago	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$26.00
Pittsburgh, bessemer	26.00
Youngstown	26.00
Cleveland	26.00
Philadelphia	31.75
Chicago	26.00
Forging, Chicago	31.00
Forging, Pittsburgh	31.00
Forging, Philadelphia	35.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	28.00

SLABS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82%, tidewater, duty paid	$68.00
Ferromanganese, del. Pittsburgh	73.24
Spiegeleisen, 19-20%, domestic fur. spot†	24.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(The above for spot carlots. Contract price $5 a ton less).	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60 per cent, per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	0.80

†Carloads. Differentials apply to quant.

Fluorspar

85 and 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton car loads	$12.00
Washed gravel, import duty paid tide, gross ton	18.50

Pig Iron

Sales Continue to Moderate—Shipments Also Slower in Lake Districts—Prices Are Steady

PIG IRON PRICES, PAGE 54

Pittsburgh—Furnace interests are finding the market still slower. The Neville Island furnace is the only merchant stack in this or the valley districts operating, as blast has not been resumed on the one at Sharpsville, Pa. A producer of cast iron pipe in southern Ohio is inquiring for some foundry iron. There is no intimation of early demand for basic, although Follansbee Bros. Co. Inc. has resumed at its Follansbee, W. Va., mill after being closed since June 30. The few carload sales of bessemer and foundry irons bring prices below $15, base, but the latter is held as the point from which competitive bidding begins.

Boston—Buying has picked up slightly, mainly in small lots, although one lot of 200 tons was sold by a domestic furnace. An inquiry for more than 300 tons is out. Foreign iron continues to undersell domestic.

New York—The pig iron market is dull, and prices are nominally unchanged.

Philadelphia—The market here is quiet. Eastern Pennsylvania foundry iron is unchanged at $12.75 to $13, base, furnace.

Buffalo—A good undertone is apparent in the market, and shipments are holding up well. The movement of iron by barge to the East has been concluded for the season.

Cleveland—A buying movement in pig iron this fall preceded the rise in steel demand, but the position here now has been reversed, with pig iron demand falling behind, and steel fairly well sustained. With one exception, furnace interests say their November shipments will be below October's. A spurt in shipments to certain automotive plants is expected this month, but not sufficient to offset a diminishing movement to other lines. Manufacturers of heating equipment, among the earliest and heaviest in the market on fall buying, are slower.

Cincinnati—Buying of pig iron has reverted to spot orders for carloads. Some interest is noted in southern iron, which remains at $10, base, Birmingham, with full differentials. Furnace interests regard with satisfaction steadiness in shipments.

Chicago—New orders for pig iron increased slightly during the past week following a marked suspension during the previous presidential election week. Shipments are steady and the movement for the first half of this month was about equal to that during the corresponding October period. Indications point to but little change in total November shipments. Consumption by automotive interests continues moderately heavier than a month ago, although requirements of heating equipment manufacturers are declining seasonally. Farm equipment interests remain out of the market.

St. Louis—Cold weather has stimulated stove business, with a consequent recurrence of orders from stove foundries. Automotive specifications also are better. Prices are firm.

Birmingham, Ala.—Orders continue light, and shipments to other districts have tapered. The Tennessee Coal, Iron & Railroad Co. has shut down the last of its active blast furnaces.

Toronto, Ont.—Improvement was noted in sales here in the past week, some orders for as much as 200 tons being placed. Prices are unchanged.

American Manganese Steel Co., Chicago Heights, Ill., will supply one 4½-yard dipper for government engineers at Duluth, for $1364.

Ferroalloy Inquiries Better, but Sales Are Slow

Ferroalloy Prices, Page 54

Spiegeleisen sellers have taken no official action in the Pittsburgh district, following a reduction to a $24 nominal base in the East recently. Ferromanganese is moving in small lots at $68, duty paid. Sellers report a fair increase in inquiries but steel mills and foundries are slow to close on alloy requirements. A quantity of 50 per cent ferrosilicon is reported to have been bought by a steel mill in the Pittsburgh district.

Semifinished Prices May Be Strengthened

Semifinished Prices, Page 54

An effort to advance the present price of $26 on sheet bars, billets and slabs, base, Pittsburgh, Youngstown, O., or Cleveland, may be made for the first quarter by some producers, it is intimated at Pittsburgh. Wire rods are moving slowly at $37, Pittsburgh. Forging billets are also in light demand, continuing at $31 base, Pittsburgh.

Coke

Beehive Foundry Fuel Down 25 Cents—Southern Coke Is Moving to New England Territory

COKE PRICES, PAGE 54

Pittsburgh—Common brands of beehive foundry coke can be obtained at $2.50, a reduction of 25 cents. Although in slack demand, premium brands of beehive foundry coke are fairly firm at $4.25. An irregular price situation is noted in beehive furnace coke, this grade being sold as low as $1.50, although leading sellers adhere to prices between $1.75 and $2. Foundries are not increasing commitments.

Cincinnati—Only slight variation in demand for by-product foundry coke has been noted this month. Domestic grades are more active.

Chicago — Producers of by-product foundry coke are taking contracts for the first half of 1933 with prices unchanged at $7, ovens, for outside delivery; and $7.75, delivered in the Chicago switching district. Shipments continue slightly heavier than a month ago.

New York—Contracting for coke is getting under way slowly, although some sellers have opened books for the first half. A leading New England interest will contract for by-product foundry coke on a basis of the prevailing market at time of delivery.

St. Louis—Demand for domestic coke has increased sharply due to cold weather, but shipments to foundries continue slow.

Birmingham, Ala.—Coke production has been increased, substantial sales having been made in the New England district, for shipment by way of Mobile, Ala., and Boston. Two coal companies have made arrangements for coking their coal here, obtaining a coking-in-transit rate from mines to New England.

Scrap

Lack of Sales Brings Easier Prices—Some Shipments Held Back on Contract Orders

Chicago — While new buying of heavy melting steel at lower prices has yet to develop, the tone of the market is slightly easier. Dealers are able to pick up occasional lots of this grade at $5.50 compared with the recent minimum of $5.75, and the full range on this grade now is $5.50 to $6, resulting in a lower average price. The last sale to mills was at $6. Demand continues light and although large consumers are reducing stock piles, interest in new purchases is absent. Boat shipments to eastern consuming points recently have aided in removing some surplus. Demand for other grades also is quiet, with prices generally unchanged.

Boston—Scrap buying continues dull, with eastern Pennsylvania

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.00 to 7.50
Boston, dealers	3.00 to 3.25
Buffalo, No. 1	7.50 to 8.00
Buffalo, No. 2	6.25 to 6.75
Chicago	5.50 to 6.00
Cleve., No. 1	7.00 to 7.50
Cleve., No. 2	6.00 to 6.50
Det., No. 1 deal.	5.00 to 5.50
Det., No. 2 deal.	3.00 to 3.50
E. Pa. del. mill	7.00 to 7.50
E. Pa., No. 2 del.	5.50 to 6.00
N. Y. deal. R. R.	4.50 to 4.75
N. Y. deal. No. 2	3.00
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	8.75 to 9.25
St. L. No. 1 sel.	6.00 to 6.50
Federal, Ill.	5.50 to 6.00
Granite City, Ill.	5.00 to 5.50
Valleys, No. 1	9.00 to 9.50

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.75
Chi. (Factory)	4.50 to 5.00
Cleveland	6.50 to 7.00
Detroit, dealers	4.75 to 5.25
E. Pa. new mat.	5.00 to 5.50
Pittsburgh	8.75 to 9.25
Valleys	8.50 to 9.00

BUNDLED SHEETS

Buffalo	4.25 to 4.75
Cinci., del.	4.25 to 4.75
Cleveland	4.50 to 5.00
Eastern, Pa.	5.00
Pittsburgh	7.75 to 8.25
St. Louis	1.50 to 2.00

SHEET CLIPPINGS LOOSE

Chicago	2.00 to 2.50
Cincinnati	2.00 to 2.50
Detroit, dealers	1.50 to 2.00
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	7.50 to 8.50
Boston, dealers	2.75 to 3.00
Buffalo	9.50 to 10.00
Chicago (3 ft.)	8.00 to 8.50
Chicago (2 ft.)	8.50 to 9.00
Cinci., del.	9.00 to 9.50
Detroit, deal.	8.00 to 8.50
Pitts. (open-hearth, 3 ft. and less)	10.00 to 10.50
St. Louis	7.50 to 8.00

STOVE PLATE

Birmingham	5.75 to 6.25
Boston, dealers	2.50 to 3.00
Buffalo	7.75 to 8.00
Chicago, net	5.75 to 6.25
Cinci., deal. net	3.50 to 4.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	6.00 to 6.50
N. Y., deal. mill	2.50 to 3.00
St. Louis	5.50 to 6.00

COUPLERS, SPRINGS

Buffalo	9.00 to 9.50
Chicago	6.50 to 7.00
Eastern Pa.	9.00 to 9.50
Pittsburgh	9.00 to 9.50
St. Louis	6.00 to 6.50

ANGLE BARS—STEEL

Chicago	7.00 to 7.50
St. Louis	6.00 to 6.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	9.00 to 9.50
Cleveland bil. and bloom crops	10.00 to 11.00
Eastern Pa.	9.00 to 9.50
Pittsburgh billet bloom crops	10.75 to 11.25
Pitts., sheet bar crops	10.75 to 11.25

FROGS, SWITCHES

Chicago	6.00 to 6.50
St. Louis	6.00 to 6.50

SHOVELING STEEL

Chicago	5.75 to 6.00
Cleveland	5.75 to 6.00
St. Louis	5.00 to 5.50

RAILROAD WROUGHT

Birmingham	4.50 to 5.50
Boston, dealers	1.00 to 1.50
Buffalo, No. 1	4.50 to 5.00
Buffalo, No. 2	7.00 to 7.50
Cinci., No. 2	5.50 to 6.00
Chi., No. 1, net	5.00 to 5.50
Chicago, No. 2	5.50 to 6.00
Eastern Pa.	7.00 to 7.50
N. Y., No. 1, deal.	2.50 to 3.00
Pitts., No. 2	8.75 to 9.25
St. Louis, No. 1	3.50 to 4.00
St. Louis, No. 2	5.00 to 5.50

SPECIFICATION PIPE

Boston	3.00 to 4.00
Eastern Pa.	7.00 to 7.50
N. Y., deal	2.00 to 2.25

BUSHELING

Buffalo, No. 1	6.25 to 6.75
Chicago, No. 1	4.00 to 4.50
Cinn., No. 1 dl.	4.00 to 4.50
Cinn., No. 2	2.50 to 3.00
Cleve., No. 2	3.00 to 3.50
Det., No. 1 new deal	4.25 to 4.75
St. L., No. 1	3.00 to 3.50
Val. new No. 1	8.25 to 9.75

MACHINE TURNINGS

Birmingham	3.00 to 3.50
Boston, dealers	0.75 to 1.00
Buffalo	3.75 to 4.25
Chicago	3.00 to 3.50
Cin., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit	2.50 to 3.00
Eastern Pa.	3.50 to 4.00
N. Y., deal	1.35 to 1.50
Pittsburgh	6.25 to 6.75
St. Louis	1.50 to 2.00
Valleys	6.75 to 7.25

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	.75 to .90
Buffalo	3.75 to 4.25
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	3.00 to 3.50
Eastern Pa.	3.50 to 3.75
N. Y., deal	1.35 to 1.50
Pittsburgh	6.50 to 7.00

CAST IRON BORINGS

Birming., chem.	12.00 to 13.00
Birming., plain	3.00 to 3.50
Boston, chem.	5.50 to 6.00
Boston, dealers	1.00 to 1.25
Buffalo	4.25 to 4.50
Chicago	4.00 to 4.50
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal	3.00 to 3.50
Eastern Pa.	3.50 to 3.75
E. Pa., chem.	8.00 to 10.50
N. Y., deal	1.00 to 1.50
Pittsburgh	6.50 to 7.00
St. Louis	2.75 to 3.25

PIPE AND FLUES

Cinn., deal.	3.25 to 3.50

RAILROAD GRATE BARS

Buffalo	4.00 to 4.50
Chicago, net	5.00 to 5.50
Cincinnati	4.00 to 4.50
Eastern Pa.	5.50 to 6.00
N. Y., deal.	3.50 to 4.00
St. Louis	4.50 to 5.00

FORGE FLASHINGS

Boston, dealers	2.00 to 2.50
Buffalo	5.50 to 6.00
Cleve. ov. 10 in.	6.00 to 6.50
Detroit	3.50 to 4.00

FORGE SCRAP

Boston, dealers	1.75 to 2.00
Chicago	7.00 to 7.50
Eastern Pa., del.	5.00 to 5.50

ARCH BARS, TRANSOMS

Chicago, net	5.00 to 5.50
St. Louis	5.00 to 5.50

AXLE TURNINGS

Boston, deal	5.50 to 6.00
Buffalo	6.50 to 7.00
Chi., elec. fce.	4.50 to 5.00
Cleveland	5.50 to 6.00
Eastern Pa., del.	7.00
Pittsburgh, O. H.	7.50 to 8.00
St. Louis	3.50 to 4.00

STEEL CAR AXLES

Birmingham	9.00 to 9.50
Boston, ship. pt.	6.00 to 6.50
Buffalo	10.00 to 10.50
Chicago, net	8.50 to 9.00
Eastern Pa.	14.50
St. Louis	9.00 to 9.50

SHAFTING

Boston, ship. pt.	7.00 to 7.50
N. Y., deal.	6.50 to 7.00
St. Louis	7.50 to 8.00
E. Penna.	11.00 to 12.00

CAR WHEELS

Birming., iron	7.00 to 7.50
Boston, iron deal.	3.50 to 4.00
Buffalo, iron	7.00 to 8.00
Buffalo, steel	8.50 to 9.00
Chicago, iron	7.25 to 7.75
Chi., rolled steel	7.00 to 7.50
Cincinnati iron	6.25 to 6.75
E. Pa. steel	9.00 to 10.00
E. Pa. iron	9.00 to 9.50
Pitts., iron	9.00 to 9.50
Pitts., steel	9.50 to 10.00
St. Louis, iron	5.00 to 5.50
St. Louis, steel	7.00 to 7.50

NO. 1 CAST SCRAP

Birmingham	6.50 to 7.00
Buffalo (Mach.)	10.00 to 10.25
Buffalo, cupola	9.00 to 9.50
Boston, textile	6.75 to 7.00
Boston No. 2	3.00 to 3.50
Chi., mach. net	6.25 to 6.75
Chi., railroad, net	5.75 to 6.25
Chicago, agri., net	5.50 to 6.00
Cinn., mach. cup	7.00 to 7.50
Cleve. cupola	7.00 to 8.00
Det., net deal.	6.50 to 7.00
E. Pa. cupola	9.00 to 9.50
N. Y., cup. deal.	5.50 to 6.50
N. Y., del. local foundries	8.00 to 8.50
Pitts., cupola	9.00 to 9.50
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. L. No. 1 ma.	6.50 to 7.00
St. L., No. 1	6.00 to 6.50

HEAVY CAST

Boston, del.	4.00 to 4.25
Bost., mach. cast	7.00 to 7.50
Buffalo, break	6.50 to 7.00
Cleve., break	4.50 to 5.00
Detroit, auto, net deal.	7.00 to 7.50
Det., break., dl.	4.00 to 4.50
Eastern Pa.	8.75 to 9.00
N. Y. No. 1, dl.	5.00 to 5.50
N. Y. break, dl.	4.75 to 5.25
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston, consum.	8.00 to 8.50
Buffalo	8.00 to 8.50
Chicago, agri.	5.00 to 5.50
Chicago, R. R.	6.00 to 6.50
Cinci., R. R., del.	7.00 to 7.50
Cinci., agri. del.	6.50 to 7.00
Cleveland, rail	7.50 to 8.00
Det. auto deal.	5.00 to 5.50
St. Louis, rail	4.50 to 5.00

RAILS FOR ROLLING

5 feet and over

Birmingham	7.50 to 7.75
Boston, deal.	5.00 to 5.50
Buffalo	7.00 to 7.50
Chicago	8.25 to 8.75
Eastern Pa.	9.50
New York dealer	4.25 to 4.75
St. Louis	7.00 to 7.50

LOCOMOTIVE TIRES

Chicago, cut	7.00 to 7.50
St. L., No. 1	5.00 to 5.50

LOW PHOS. PUNCHINGS

Chicago	7.50 to 8.00
Buffalo	9.00 to 9.50
Eastern Pa.	9.50 to 10.00
Pittsburgh	10.75 to 11.25

taking water shipments, 1000 tons or more, of No. 1, No. 2 and auto blocks, a minimum of $4.50 being paid for No. 1 and $2.50 for No. 2, barge. Cast grades are inactive. Machinery cast is inclined to be easier, while $4, cars, is offered for breakable cast for eastern Pennsylvania. For chemical borings $6, f.o.b., is offered.

To attract heavier shipments by rail of scrap iron and crop ends, the New England association proposes a rate reduction on shipments of 30 tons minimum to Worcester from various points in Connecticut. From Bridgeport, New Haven, Ansonia, Meriden, Waterbury and New Britain the proposed rate is $1.75 a gross ton and from Middletown, New London and Wallingford the rate would be $1.50.

New York—No. 2 melting steel for export has dropped 50 cents a ton to $3, barge, one buyer at that figure having sold several thousand tons for European account. While most leading eastern plate mills are taking some scrap, shipments are not large and in some instances against old orders. Pipe foundries are buying moderately of cast and steel grades. A Trenton, N. J., mill has bought some cast. Stove plate is reported moving to Harrisburg at $6.50 to $7, delivered, while $4.50 is paid for barge loading for Bayonne, N. J. No. 1 steel is unchanged at $4.50, barge, and for rail shipment to eastern Pennsylvania mills the same price is being paid at Jersey City.

Philadelphia—Trading in steel and iron scrap is negligible with shipments against contracts still suspended by important consumers. Prices are largely nominal.

Buffalo—Dealers are being urged to mark down their nominal price quotations to bring out business believed in prospect if this action is taken. Unconfirmed reports are that a general reduction in price asked for heavy melting steel would bring out tonnage purchases.

Cleveland—Even quieter trading conditions have settled upon the northern Ohio iron and steel scrap market. New buying is at minimum and shipments are restricted to immediate needs. Weakness is not reflected in quotations, which have become laregly nominal.

Pittsburgh—Iron and steel scrap is quoted slightly lower this week due to the price of $8.75 which was the basis of award of 500 tons of No. 1 heavy melting steel on the Baltimore & Ohio railroad list. This material was brought into the Pittsburgh district. The market last week lacked new transactions but anxiety of dealers for orders has not forced them to resort to decidedly lower asking prices nor distress sales. The quiet condition continues not only in heavy melting steel but hydraulic compressed sheets, blast furnace material, low phos and specialties.

Detroit—Prices have softened and declined 25 to 50 cents per ton because of a larger supply from increased automotive operations and lack of demand, as well as in sympathy with an easier situation in other centers.

Cincinnati—Buoyancy in the iron and steel scrap market here has almost entirely disappeared. Buying interest is missing, as if consumers are intent on reducing inventories. Recent railroad lists attracted bids slightly lower than in the two preceding months. Heavy melting steel is quotable 25 cents lower, at $5.50 to $6. Malleable is weaker and other prices nominal.

St. Louis—General demand for iron and steel scrap remains quiet, new buying consisting of small scattered lots of special material for prompt shipment. Shipments to melters have held up fairly well, but have taken heavy toll of unexpired orders, the volume of which is unusually small, even for this season.

Birmingham, Ala.—A little No. 1 cast has been moving lately, but the scrap iron and steel market is quiet and prices are weak. Heavy melting steel purchasing lags, the several consumers not adding to stock.

Toronto, Ont.—Iron and steel scrap sales are tapering. Current demand is specialized, with only a few grades moving. No. 1 machinery cast is the most active and there is some call for wrought iron. Heavy melting steel and turnings are out of demand with shipments light, other grades are spotty and featureless. Dealers have made no change in prices, but are offering 50 cents above list for attractive lots of machinery cast.

Equipment

Sales Volume Slow To Gain Momentum—Repair Old Units

New York—Slight improvement in inquiry for machine tool equipment is registered, including a list of tools for a nearby technical school and a scattering from miscellaneous industrial plants. General Electric Co. has bought several tools for its Schenectady works.

Worcester, Mass.—Activity in machine tools and equipment, both demand and inquiry, is listless. A few sellers note a slight livening of interest from some industries, but this is not general. Trade acceptances of the Russian government representative in the United States, amounting to $3,500,000, were paid last week, some of this fund going to New England machine builders. Practically the entire activities of the S. K. F. Industries Inc. have been moved from Hartford, Conn., to Philadelphia with the exception of the cast iron division, which will ultimately be moved to the latter city.

Pittsburgh—A few more inquiries came into the market last week from the steel mills but none was of much size or consequence. Repair work seems to be the extent of the interest shown. Plans of at least one leading independent mill in this district have been held up, these plans calling for expenditure of some $3,000,000 in one of its works. The same hesitancy is evidenced by the United States Steel Corp. in releasing funds for purchase of materials in its plant rehabilitation program in this district. Roll business is light with mills still failing to carry spares and in fact, utilizing old rolls where mill practice would call for purchase of new equipment. Furnace interests in Warren, O., and Pittsburgh were successful in work awarded recently by American Sheet & Tin Plate Co.

Cleveland—Gradual improvement in equipment sales is noted and the long-term outlook is good, although immediate trends are slow to exhibit any rapid rises. A more buoyant sentiment generally is calculated to exert a beneficial effect upon inquiries and orders. Stocks of used machinery are high due to the frequent necessity for dealers to take in one or more used tools for every new one sold.

Chicago—Business in machinery and equipment is spotty with little change noted in the volume of orders or inquiries. Occasional gains are noted in demand for repair parts, reflecting increased plant operations at some centers. In most cases where old equipment may be used companies are attempting to improve tools and machinery rather than purchase new units. Railroads continue inactive in the machine tool market although the Chicago, Burlington & Quincy is inquiring for a press. Inquiry for cranes and steam shovels recently has been more active although orders are light.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

SHEETS	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, cut, to jobbers	7.00
Zinc sheets (100-lb. base)	9.00
TUBES AND PIPES	
Seamless yellow brass (high)	15.25
Seamless copper	14.37½
RODS	
Yellow brass (high, full turning)	10.25
Naval brass	11.37½
ANODES	
Copper, untrimmed	12.25
WIRE	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb.

	No. 1 Composition	Red Brass
New York	2.87½ to	3.00
Chicago	2.25 to	2.50
Cleveland	2.50 to	2.75
St. Louis		2.50
HEAVY YELLOW BRASS		
New York	1.87½ to	2.00
HEAVY COPPER AND WIRE		
New York	3.62½ to	3.87½
Chicago, No. 1	3.25 to	3.50
Cleveland	2.75 to	3.00
St. Louis		2.75
COMPOSITION BRASS BORINGS		
New York	2.50 to	2.75
YELLOW BRASS TUBING		
Cleveland	1.50 to	2.00
LIGHT COPPER		
New York	2.87½ to	3.00
Chicago	2.25 to	2.50
Cleveland	2.25 to	2.50
St. Louis		2.50
LIGHT BRASS		
Chicago	1.25 to	1.50
Cleveland	1.00 to	1.25
St. Louis		1.50
LEAD		
New York	2.00 to	2.25
St. Louis		2.00
ZINC		
New York	1.12½ to	1.25
Cleveland	1.00 to	1.12½
St. Louis		1.25
ALUMINUM		
Clippings, new, soft, Cleve.	9.50 to	10.00
Clippings, hard, Cleveland	7.00 to	8.00
Borings, Cleveland	3.00 to	3.50
Mixed cast, Cleveland	4.00 to	5.00
Mixed cast, St. Louis	3.00 to	3.25

Secondary Metals

Remelt aluminum No. 12	8.00 to	9.00
Brass ingot, 85-5-5-5		5.75

Metals

Lead Declines but Copper Is Fairly Steady—Zinc Advances On Better Demand—Tin Eases

New York—Quotations on most metals held fairly steady this week with the exception of lead which declined following a tapering in demand. Tin was somewhat lower. Zinc firmed up. Copper held unchanged as did aluminum, nickel and antimony.

Copper—Domestic buying of copper continued quiet last week with custom smelters quoting a minimum of 5.37½c, Connecticut, for delivery this year and 5.50c for delivery in first quarter of 1933. Mine producers remained out of the market at the asking price of 6.25c. Some producer metal was reported to have been sold quietly, however for shipment in the first two months of 1933 at 5.50c. Copper and brass products and brass ingots showed no change. World stocks of copper declined to 786,412 tons Oct. 31 from 790,542 tons a month earlier.

Lead—American Smelting & Refining Co. reduced its price $3 a ton Friday to 3.00c, New York. Sellers in the outside market reduced their price $2 a ton to 2.90c, East St. Louis.

These reductions followed a tapering in demand over the earlier part of the week. October shipments of lead were the heaviest since March.

Zinc—Zinc trading was heavier earlier in the week following reported sales of 2700 tons in the preceding week. As a result producers quoted somewhat higher prices which apparently were holding as the week closed although demand was less active.

Tin—Prices were firm as the week opened but later eased off with declines in the London market and weakness in the exchange rate on sterling. Demand from consumers was light.

Antimony—Prices held at the recently higher levels although consumers participated little in the market during the week.

Aluminum—No market activity developed in aluminum. Prices showed little change.

Buying Naphthalene

New York—Some contracting for next season has been done on naphthalene, but the majority of consumers are not expected to cover until next month. Distillates are firm, output being restricted. Toluol probably is the most active of the group. Phenol buying is in small lots, while the market for sulphate of ammonia is dull.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.0525

Quicksilver Steady

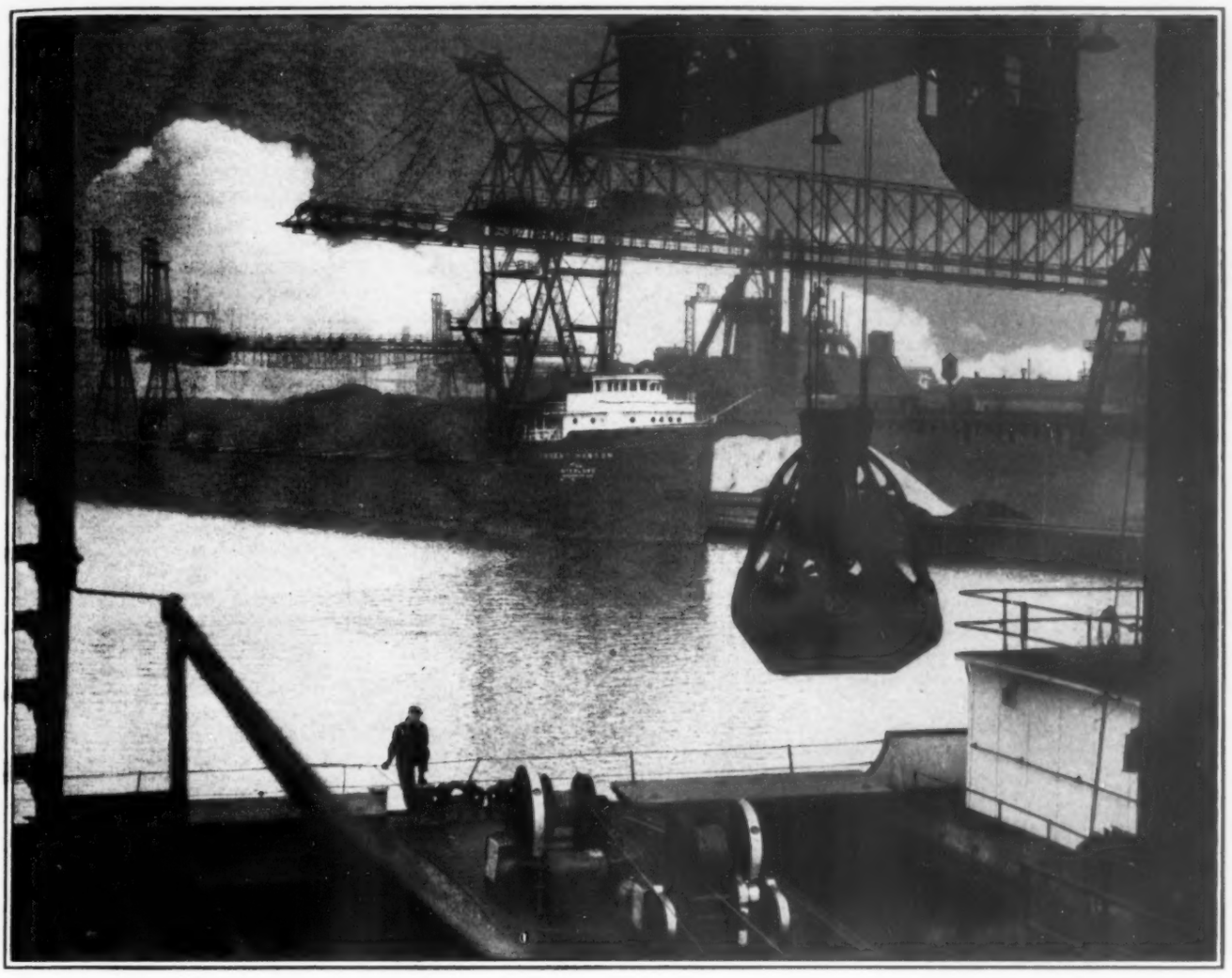
New York—Quicksilver is unchanged, with round lots available at $49, a virgin flask of 76 pounds, and small lots at $50. Trading is quiet. An importation of 800 flasks arrived last week for the General Electric Co.

Hawkins Ornamental Iron Works, Ensley, Ala., has received a contract for metal work to be installed in the Cleveland, Tenn., postoffice.

Nonferrous Metal Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin—New York Spot	Straits Tin—New York Futures	Lead New York	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot	Nickel Ingot
Nov. 12	5.37½	6.37½	5.12½	24.25	24.40	3.15	3.00	3.10	22.90	5.87½	35.00
Nov. 14	5.37½	6.37½	5.12½	24.10	24.30	3.15	3.00	3.15	22.90	5.87½	35.00
Nov. 15	5.37½	6.37½	5.12½	24.00	24.15	3.15	3.00	3.15	22.90	5.87½	35.00
Nov. 16	5.37½	6.37½	5.12½	23.80	23.95	3.15	3.00	3.15	22.90	5.87½	35.00
Nov. 17	5.37½	6.37½	5.12½	23.35	23.45	3.15	3.00	3.15	22.90	5.87½	35.00
Nov. 18	5.37½	6.37½	5.12½	23.45	23.55	3.00	2.90	3.15	22.90	5.87½	35.00

MODERN IRON MAKING



THE HISTORY of iron through the ages makes one of the stirring recitals of human history. Man has conquered the elements and proven his superiority to the lower forms of life by his mastery of iron. ' ' ' Ancient and medieval iron making was as primitive as the civilizations it served and advancement came slowly. Only the nineteenth and twentieth centuries have seen the perfection of iron making processes to the point of large production at low cost with great resulting benefit to the world. ' ' ' Chief among these new processes which brought about modern iron making was the union of coal tar chemistry and iron manufacture, through which great quantities of new products were developed and values created which greatly reduced the cost of iron. ' ' ' Interlake Iron Corporation, through its immediate corporate predecessor, was founded by the industrial pioneers who brought coal tar chemistry to the United States. Its history is the history of modern iron making in this country. ' ' ' On this foundation rests an organization with all facilities for serving the needs of every user of iron, coke or coke by-products.

World's Work magazine for January, 1932, published the romantic story of the Interlake Iron Corporation and its corporate antecedents—a history which outlines the evolution of modern iron making. A limited number of reprints of this story have been made and a copy will be sent on request

INTERLAKE IRON CORPORATION

PIG IRON ' COKE

PICKANDS, MATHER & COMPANY, Sales Agents

CLEVELAND • CHICAGO • DETROIT • ERIE • TOLEDO • MINNEAPOLIS • DULUTH

Europe

Wider Market Developing in Britain and Continent—Iron And Steel Output Larger

London—(*By Cable*) — Inquiries for steel and iron products are widening in volume and area. Improvement in export demand is general and competition of Continental material has been substantially reduced, being no longer a major factor in the market.

Production of iron and steel increased in October over September. Pig iron output in October was 275,600 tons, compared with 260,400 tons, a gain of 15,200 tons. The daily rate rose from 8680 tons to 8884 tons. Steel tonnage in October was 438,500, compared with 430,300 in September, a gain of 8300 tons.

Iron and steel imports gained 56,190 tons from the 107,100 tons in September to the 163,190 tons in October. Exports also gained, though at a smaller rate, the growth being 33,430 tons from 127,000 in September to 160,430 tons in October.

Reports of conditions on the Continent continue more satisfactory and increase in export prices is featured. Inquiries from most markets are expanding and some works are booked to capacity until January.

Pacific Coast

Steady Buying in Small Lots Keeps Market Active

San Francisco—(*By Air Mail*)—Few awards of importance were placed during the past week. Demand has eased somewhat, although prices continue to hold. Bids will be opened Dec. 19 for 3838 tons of reinforcing steel and 275 tons of plates and shapes for pipe, gates, etc., for San Gabriel dam No. 1, Los Angeles county, Calif.

Unnamed interests took 26 tons of wire mesh for highway work in Santa Clara county, California, for the state and 135 tons of reinforcing steel for highway work in San Diego county, California. Kalman Steel Corp. booked 108 tons for highway work in Yellowstone Park, Mont. Bids have been opened on 162 tons for highway work in Ventura county, California, and 117 tons for a crossing in Los Angeles county. Bids are being taken on 100 tons for two bridges in Colorado for the state. Out-of-stock quotations hold around 2.40c, base, in carload lots, in the San Francisco and Los Angeles district. Merchant bar steel is priced at 2.10c, c.i.f.

The only plate award of size went to the Chicago Bridge & Iron Works and called for 200 tons for tanks for the Union Oil Co. at Los Angeles and Wilmington, California. New Mexico has placed close to 400 tons of sheets for culverts with various makers. Prices are general at 2.00c, c.i.f.

After several weeks of heavy structural shape activity, demand has tapered and only one award over 100 tons was reported. Moore Drydock Co. took 223 tons for the widening of a causeway in Yolo county, California. Bids were to have been opened Nov. 16 for 735 tons for an addition to the General hospital, San Francisco, but the opening has been indefinitely postponed.

Bids open this week on 319 tons of cast iron pipe for Burbank, Calif. Bids open Nov. 21 on 89 tons for Albuquerque, N. Mex.

Seattle Sales Shrink

Seattle—Sheble Construction Co., Seattle, general contractor for the Willapa River state bridge, has awarded 350 tons of shapes and 50 tons of machinery to the Pacific Car & Foundry Co., Seattle. On the same job 121 tons of reinforcing steel went to the Soule Steel Co., Portland Oreg. These were the only awards exceeding 100 tons this week. Puget Sound Bridge & Dredging Co., Seattle, is low bidder at $466,410 for construction of a 1400-foot section of the Los Angeles navy breakwater. Subcontracts will be handled by the company's representative, W. F. Way, Santa Monica, Calif. The job involves an unstated tonnage of structurals, reinforcing and sheet steel piling which will probably be purchased in California.

Last week's public works awards in the Pacific Northwest, totaling $3,083,379, were among the largest of the year. Public roads bureau opened bids on two Oregon projects this week totaling $160,000 while Hauser Construction Co., Portland, has the award for a state highway project for which metal pipe is specified as against concrete.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Nov. 17

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON		£ s d		£ s d
Foundry, 2.50-3.00 Silicon	$ 9.59	2 18 6	$8.76 to $9.25	1 16 0 to 1 18 0
Basic bessemer	8.86	2 14 0*	6.81	1 8 0
Hematite, Phos. .03-.05	9.68	2 19 0	.....	.....
SEMI-FINISHED STEEL				
Billets	$15.99	4 17 6	$10.71	2 4 0
Wire rods, No. 5 gage	24.60	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$25.42	7 15 0	$26.77	5 10 0
Merchant bars	.91c	6 5 0	.66c	3 0 0
Structural shapes	1.08c	7 7 6	.50c to .51c	2 5 0 to 2 6 0
Plates, †¼ in. or 5 mm.	1.28c	8 15 0	.72c to .73c	3 5 0 to 3 6 0
Sheets, black, 24 gage or 0.5 mm.	1.20c	8 5 0	1.29c	5 17 6
Sheets, gal., 24 gage, corr.	1.46c	10 0 0	1.51c	6 17 6
Bands and strips	1.13c	7 15 0	.77c to .80c	3 10 0 to 3 12 6
Plain wire, base	1.39c	9 10 0	1.18c	5 7 6
Galvanized wire, base	1.68c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.61c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.62	0 16 0	$3.20	0 13 2

British forromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$9.59	2 18 6	$8.04	205(2)	$8.34	300	$16.42	69
Basic bessemer pig iron	8.86	2 14 0*	6.66	170(1)	7.51	270	17.96	75.50
Furnace coke	1.97	0 12 0	4.86	124	3.06	110	4.57	19.20
Billets	16.40	5 0 0	14.50	370	10.84	390	22.96	96.50
Standard rails	1.20c	8 5 0	1.25c	697	1.50c	1,150	1.37c	127
Merchant bars	.99c	6 15 0	.95c	530	.68c	525	1.19c	110
Structural shapes	1.28c	8 15 0	.99c	550	.64c	490	1.16c	107.50
Plates, †¼-in. or 5 mm.	1.31c	9 0 0	1.17c	650	.78c	600	1.37c	127
Sheets, black	1.35c	9 5 0§	1.44c	800‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.65c	11 5 0	2.83c	1,570	1.87c	1,440	4.00c	370
Plain wire	1.39c	9 10 0	2.03c	1,130	1.69c	1,300	1.92c	178
Bands and strips	1.39c	9 10 0	1.04c	580	.83c	640	1.37c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.

STEEL, WROUGHT AND CAST IRON PIPE, AND TUBING

Welded Iron, Steel Pipe

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
¼ & ⅜	57	34	½	28	10½
½	62	49½	¾	33	16½
¾	65½	55	1—1¼	36	20½
1—3	67½	57	2	38	21

LAP WELD

2	61	50½	2	26	12½
2½ to 6	64½	54	2½—3½	33	18½
8	62	51	4—6	35	22
10	60	49	7—8	34	21½
12	59	48	9—12	31	16½

BUTT WELD

Extra strong, plain ends

⅛	48	33	¼ & ⅜	+7	+41
¼ & ⅜	53½	38½	½	28	12½
½	59	49½	¾	33	17½
¾	63½	54	1—2	39	23

LAP WELD

Extra strong, plain ends

2	59	49½	2	34	18½
2½ to 4	62½	53	2½—4	39	25
5 & 6	62	52½	4½—6	38	24
8	58	47	7 & 8	36	22
10	51½	40½	9—12	26	13½
12	50½	39½			

STEEL LINE PIPE

2 to 3 butt	66½	2½ to 6 lap	63½
2 lap	60	8 lap	61
10 lap	59	12 lap	58

Discounts on steel pipe are net and not subject to any point or preferential. On iron pipe, the discounts shown on the cards are net, and are not subject to any further discounts or preferentials.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		*Charcoal Iron*	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$32.00 to 33.00
Four-inch, Birmingham .... 36.00 to 37.00
Four-inch, Chicago ..... 43.40 to 44.40
Six to 24-inch, Chicago..... 40.40 to 41.40
Six-inch and over, N. Y... 32.00 to 34.50
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore*	2.35c
Boston	3.50c
Buffalo	2.95c
Chattanooga..	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los. Ang.	3.30c
New York‡(d)	3.10c
Philadelphia..	2.45c
Pittsburgh	2.60c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.35c
Boston	3.25c
Buffalo	3.15c
Chattanooga..	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia..	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga..	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los. Ang. cl...	2.10c
Los Ang., lcl	2.40c
New York....	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.50c
San Fran. lcl	2.80c
Seattle	3.00c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore*	2.35c
Boston	3.50c
Buffalo	3.20c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.30c
New York(d)	3.10c
Philadelphia..	2.45c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES

Baltimore*	2.35c
Boston	3.50c
Buffalo	3.20c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles..	3.30c
New York(d)	3.30c
Philadelphia..	2.45c
Phila. floor....	5.10c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE

Baltimore*	2.80c
Boston	3.50c
Buffalo	3.45c
Chattanooga..	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.60c
N. Y.	3.00c
Portland	4.00c
Phila.*† (e)....	2.90c
Pitts.**	3.00c
San Fran.	3.50c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	3.70c
Chattanooga..	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.20c
New York..3.75c-4.00c	
Phila.*†(e) ..	3.40c
Pitts.**	3.40c
Portland	4.50c
San Fran.	3.90c
Seattle	4.50c
St Louis	3.80c
St Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.05c
Chattanooga..	3.95c
Chicago	4.10c
Cincinnati ...	4.25c
Cleveland	3.75c
Detroit	3.75c
Houston	4.25c
Los. Ang.	4.50c
New York....4.00c-4.10c	
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	5.00c
San. Fran.	4.55c
Seattle	5.00c
St. Louis	4.35c
St. Paul	4.19c
Tulsa	5.10c

†BANDS

Baltimore	2.65c
Boston	3.75c
Buffalo	3.30c
Chattanooga..	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter....	3.15c
Houston	3.65c
Los Ang.	3.80c
New York(d)	3.30c
Philadelphia..	2.75c
Pittsburgh	2.95c
Portland	3.85c
San Fran.	3.15c
Seattle	3.50c
St. Paul	3.20c
Tulsa	3.45c

†HOOPS

Baltimore	2.65c
Boston	4.90c
Buffalo	3.95c
Chicago	3.50c
Cincinnati	3.75c
Det. No 14 & lighter....	3.30c
New York	3.30c
Philadelphia..	3.00c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	**3.75c**

†New extras apply.

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)*	3.48c
Boston	3.60c
Buffalo	3.00c
Chattanooga*	3.68c
Chicago	3.00c
Cincinnati	3.32c
Cleveland	2.95c
Detroit	3.15c
Los Ang. (a)	4.25c
New York	3.39c
Philadelphia*	3.35c
Pittsburgh	2.95c
Portland (a)	4.50c
San Fran. (d)(f)	5.55c
Seattle (a)....	4.50c
St. Paul (a)..	3.20c
St. Louis	3.36c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (b)...	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c).....	4.55c
New York	4.55c

(a) Rounds, hex. only.
(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
‡Domestic bars.
*Plus quan. extras.
**Less than 25 sheets.
*†50 or more bundles.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New York

ALBANY, N. Y.—Hickey Sales & Service Corp. has been incorporated with 50 shares no par value to manufacture machinery and equipment, by Parsona & McClung, Albany, N. Y.

BOLIVAR, N. Y.—H. S. Bell Co., consulting engineer, Woolworth building, New York, has been retained to make plans for a refinery here by Alleghany Refiners Inc., New York.

NEW YORK — Renu-A-Blade Corp. has been incorporated with $10,000 preferred stock and 200 shares no par value to manufacture cutlery, by H. Kohn, 1501 Broadway, New York.

SYRACUSE, N. Y.—Sayre-Hanna Engineering Corp. has been incorporated with $100,000 capital to manufacture electric heaters, by Stone & Marvin, Syracuse, N. Y.

New Jersey

ATLANTIC CITY, N. J.—Mack Air Conditioning Corp. has been incorporated with $50,000 capital to manufacture automatic devices for use in air conditioning and similar applications, by William Elmer Brown Jr., Atlantic City, N. J.

NEWARK, N. J.—Machinery Exchange of New Jersey has been incorporated with 2500 shares no par value to operate a brass foundry and toolmaking and machine shop, by Julius Stein, 24 Commerce street, Newark, N. J.

PASSAIC, N. J.—Passaic Economy Iron Works Inc. has been incorporated with $100,000 capital to manufacture ornamental iron work, by Razen & Danowitz, Passaic, N. J.

VINELAND, N. J.—Kon-O-Me Burner Corp. has been incorporated with 1000 shares no par value to manufacture cooking and heating appliances, by Harry Adler, Bridgeton, N. J.

Ohio

CLEVELAND — Furnace Parts & Foundry Co. has been incorporated with $1000 capital, by H. H. Webster, 1019 Williamson building, Cleveland.

CLEVELAND—Lake Erie Steel & Blanking Co. has been incorporated with 250 shares no par value, by Cannon, Spieth, Taggart, Spring & Annat, 1565 Union Trust building, Cleveland.

EAST LIVERPOOL, O.—Patterson Foundry & Machine Co. plans to enter the heating field about Jan. 1 with a line of conditioned air heating systems, air conditioners, oil burners, domestic stokers and gas-fired equipment for all types and sizes of heaters.

Michigan

DETROIT—A. A. Smith has been awarded contract for boiler foundations at the Ecorse plant of the Murray Corp. of America.

DETROIT—Detroit Oxygen & Acetylene Co., 6535 Russell street, has been incorporated with $50,000 capital to manufacture oxygen, acetylene and nitrogen, by Fred W. Robinson, 17193 Roselawn avenue, Detroit.

DETROIT—Welding Engineers Inc. has been incorporated with $10,000 capital to do a general acetylene, electric and thermit welding business, by John M. Olson, 4489 Fourteenth street, Detroit.

DETROIT—Inland Products Co., 6565 Mack street, has been incorporated with 3500 shares no par value to manufacture rust-preventing and rust-removing products, by Lavenia Best, 16724 Shaftsbury road, Detroit.

DETROIT—United States engineers will take bids late in November for a port project in the River Raisin channel at Monroe, Mich., involving dredging of about 5,800,000 cubic yards, to cost about $600,000.

FRANKFORT, MICH.—Village council is considering plans for a municipal electric light and power plant.

MIDLAND, MICH.—Dow Chemical Co. will build an additional plant structure 100 x 120 feet for production of general organic products.

Illinois

ROCKFORD—Kelpo Clutch Co., 216 Mill street, has been incorporated with $10,000 capital to manufacture clutches and mechanical devices, by E. E. Woodward and associates. John H. Bishop, Board of Trade building, Chicago, is correspondent.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids until Nov. 29, as follows: Schedule 9096, one locomotive-type firetube boiler for Lakehurst, N. J.; schedule 9092, one motor-driven geared-head gap lathe for Mountain View, Calif.; schedule 9103, one motor-driven plain cylindrical grinder for Puget Sound, Wash.; Until Dec. 6, schedule 9105 one

with
Natural or Artificial Gas

MORE than 150 successful steel mill installations now in operation have proven the distinct advantages of Controlled Lumiflame Burners.

Manufactured Under License by

THE OHIO VALLEY CLAY COMPANY
Steubenville, Ohio

CONTROLLED LUMIFLAME BURNER

box-type electric furnace for Mountain View, Calif.; schedule 9111, 12 distributing transformers for Mare Island, Calif.

LOUISVILLE, KY.—Hoffman Gas & Electric Heater Co., recently organized, has purchased the Hoffman Heater Co. and plans to double production, adding electric heaters to the line of gas heaters produced by the old company since 1903. Walker H. Bowman Jr. is president of the new company. He also is president of the National Forge Co., Louisville, Ky.

CHATTANOOGA, TENN.—Bids have been taken by United States engineers here for 740 tons of steel products for lock and dam No. 3 on the Tennessee river.

Minnesota

MINNEAPOLIS, MINN. — Standard Iron & Wire Works, manufacturer of fencing and ornamental iron products, has moved to a larger plant which offers increased production facilities.

Iowa

CORNING, IOWA—Voters have approved a proposition to build a municipal electric light and power plant to cost $160,000, to be paid for out of future earnings, under a new state law.

Utah

SALT LAKE CITY, UTAH—J. H. Whiting, Springville, Utah, is low bidder at $57,405 for a concrete overhead crossing over the Denver & Rio Grande Western railroad at Colton, Utah; Knowleton & Rupert, Dayton, Utah, are low at $23,142 for a crossing at Spanish Fork Canyon; T. G. Rowland, Salt Lake City, is low at $ 5,295 for a crossing over Western P[illegible]fic tracks near Salt Lake City.

Pacific Coast

CLAREMONT, CALIF.—Vortox Mfg. Co., James M. Judy vice president, is in production of a large order for truck and tractor air cleaning accessories.

LOS ANGELES—Metalite Mfg. Co., metal spinner and manufacturer of metal stampings, tools and dies, has taken larger quarters at 116 West Washington boulevard.

LOS ANGELES—Kittle Mfg. Co., 648 Santa Fe avenue, has been given the contract for 116,000 pairs of automobile plates by the Arizona state highway commission.

LOS ANGELES—National Rust Prevention & Waterproofing Co., 3040 South Main street has started manufacture of a penetrating oil for rust prevention in steel and iron and waterproofing for other materials.

LOS ANGELES—Union Oil Co. plans to spend $100,000 for a pressure distilling stabilizing plant at its Wilmington refinery. Pipe lines are also being extended at a cost of $40,000.

LOS ANGELES—Quality Metal Spinning Shop has moved to larger quarters at 217 East Washington boulevard where larger facilities will be available for production of spun products, lighting fixtures and ornamental iron work.

Dominion of Canada

VANCOUVER, B. C.—The government has assured Mayor L. D. Taylor that construction of the Second Narrows bridge will be done without municipal or private financing. It had been proposed that the city contribute $300,000 in harbor bonds, provided the Dominion Bridge Co. would take bonds for $900,000, the remainder of the cost.

HAMILTON, ONT.—Cyklop Co. Ltd. has been incorporated with 25,000 shares no par value, to do a general metal manufacturing business, by Violet O. Shaver, Hamilton, Ont.

HAMILTON, ONT.—Fairplay Motors Ltd. has been incorporated with 10,000 shares no par value to manufacture motor cars, trucks and tractors, by Mary E. Smale, Hamilton, Ont.

Curtis

Solves a big

Problem of Compressor Operation

in perfecting practically carbon-free valves. New type head with short intake passages, oversize ports and straight line air flow—brings air into cylinder at lowest possible temperature, with resulting peak pressure and temperature of compression so low there is practically no evaporation of oil on piston and cylinder walls.

Cooled air intake also greatly increases capacity of compressor.

Carbon-Free Valves Timken Bearings Centro Ring Oiling

Timken bearings assure longer life with easy adjustment. Centro-ring oiling provides controlled lubrication.

Entire design increases capacity in relation to size so that prices are relatively lower. Write for illustrated folder giving full details. Curtis Pneumatic Mchy. Co., 1996 Kienlen Ave., St. Louis, Mo.

2 and 4 Cylinder. Made in V-Belt and Direct Drive, Stationary and Portable Types

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STANDARD CRANES
Up to 430 tons capacity

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Up to 320 tons capacity

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Up to 200 tons capacity

Ladle Cranes
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Coal Pier Equipment
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Cement Plant Machinery
Dock Handling Equipment
Coke Oven Equipment

275 of 100 Tons Capacity and over

LADLE AND STANDARD CRANES

59		100 tons
2	WORM DRIVEN Ladle,	100 tons
2		115 tons
6	WORM DRIVEN Ladle,	125 tons
45		125 tons
30		150 tons
3	WORM DRIVEN Ladle,	150 tons
6	WORM DRIVEN Ladle,	160 tons
2	WORM DRIVEN Ladle,	165 tons
7	WORM DRIVEN Ladle,	175 tons
27		175 tons
3	WORM DRIVEN Ladle,	200 tons
4		200 tons
5		225 tons
1		250 tons
3	WORM DRIVEN Ladle,	250 tons
3	WORM DRIVEN Ladle,	275 tons
1		275 tons
1		300 tons
3		430 tons

STRIPPING CRANES

8		100 tons
1		125 tons
22		150 tons
19		200 tons
1	Single Ram,	320 tons

COMBINATION CHARGERS AND STRIPPERS

3		100 tons
1		125 tons
3		150 tons
4		200 tons

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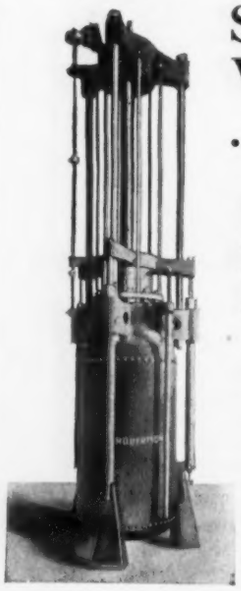

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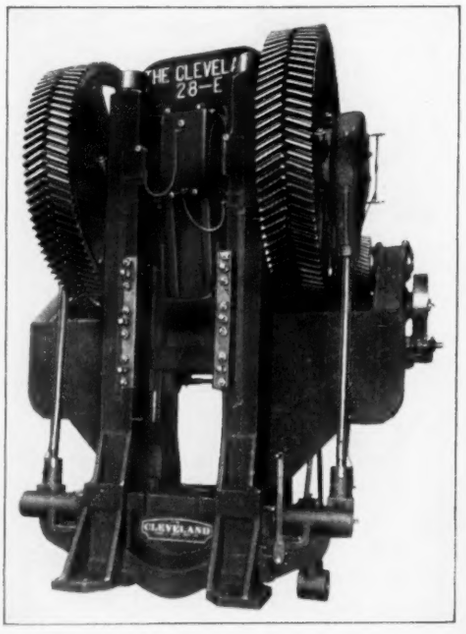

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